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Illinois U Library

The IRON AGE

NOVEMBER 18, 1948

NEW DEPARTURE

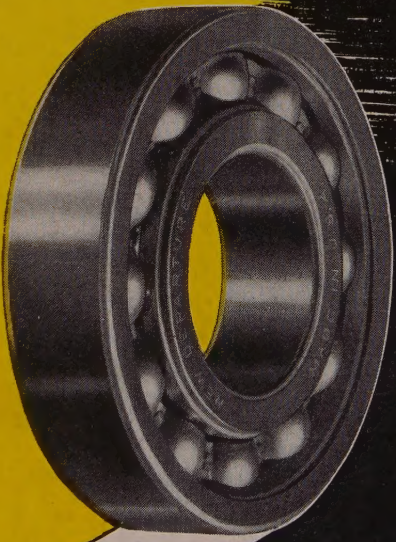
NEW DEPARTURE, true to its name, is noted for original, *practical* thinking.

This thinking, applied to the fundamental fact that "*Nothing rolls Like a Ball*" — and materialized in tough, enduring steel — has licked friction and wear wherever shafts turn.

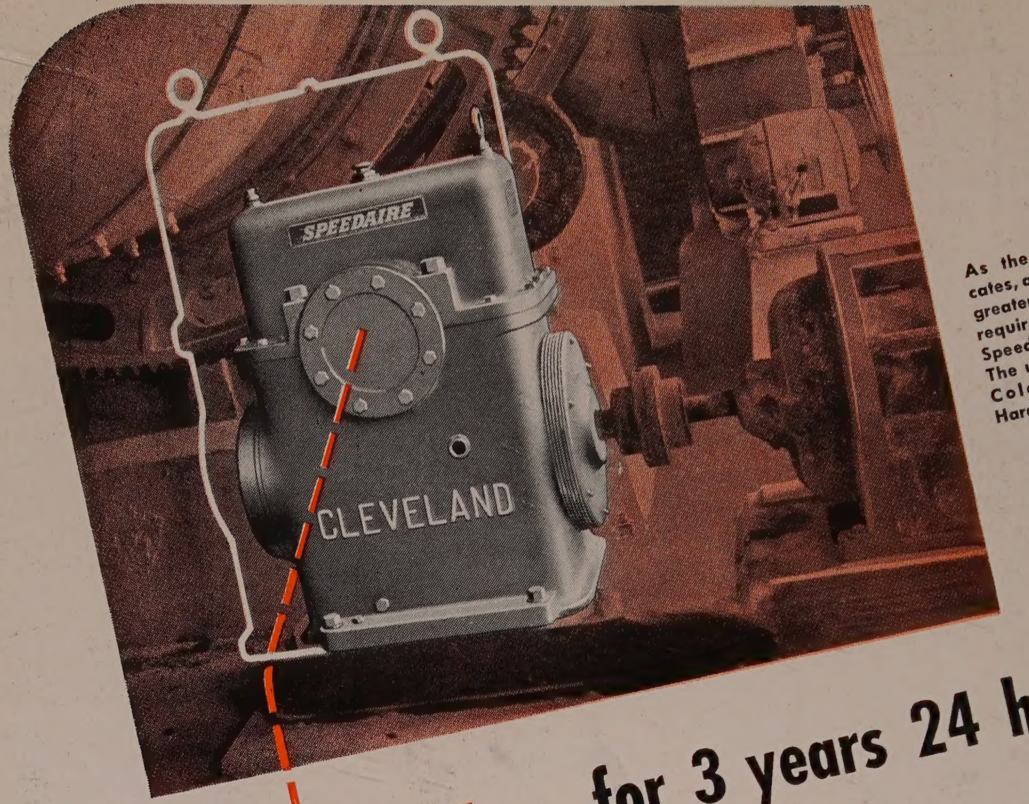
In literally thousands of applications, New Departure *Ball* Bearings are solving today's knottiest problems of higher speeds, heavier loads and greater rigidity.

Perhaps they will solve yours, too.

NEW DEPARTURE
BALL BEARINGS



NEW DEPARTURE • Division of GENERAL MOTORS CORPORATION • BRISTOL, CONNECTICUT



As the white outline indicates, a standard unit of much greater frame size would be required to do the work of Speedaire.
The unit operates a Ruggles-Coles Dryer, built by the Hardinge Co., Inc., York, Pa.

SPEEDAIRE . . . for 3 years 24 hours a da

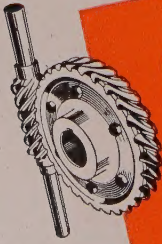
THREE years ago, a South Carolina kaolin plant installed one of Cleveland's new fan-cooled Speedaire worm gear speed reducers to drive a rotary kiln. It has operated almost continuously, day and night, ever since, with unimpaired efficiency in spite of the heat and dust.

As the photograph indicates, a limited area was available to install a speed reducer, but it was entirely adequate for Speedaire, because it occupies 42% less space than a conventional worm gear drive of comparable capacity. Speedaire also saved $128.50 on initial cost.

Because Speedaire is fan-cooled, it will do more work—will deliver up to *double the horsepower* of standard worm units of equal frame size, at usual motor speeds. It can be installed economically on many applications where other types have been used heretofore—giving you the advantage of a compact right-angle drive. Speedaire gives the same long, trouble-free service characteristic of all Clevelands.

For full description, send for Catalog 300. The Cleveland Worm & Gear Co., 3252 East 80th St., Cleveland 4, Ohio.

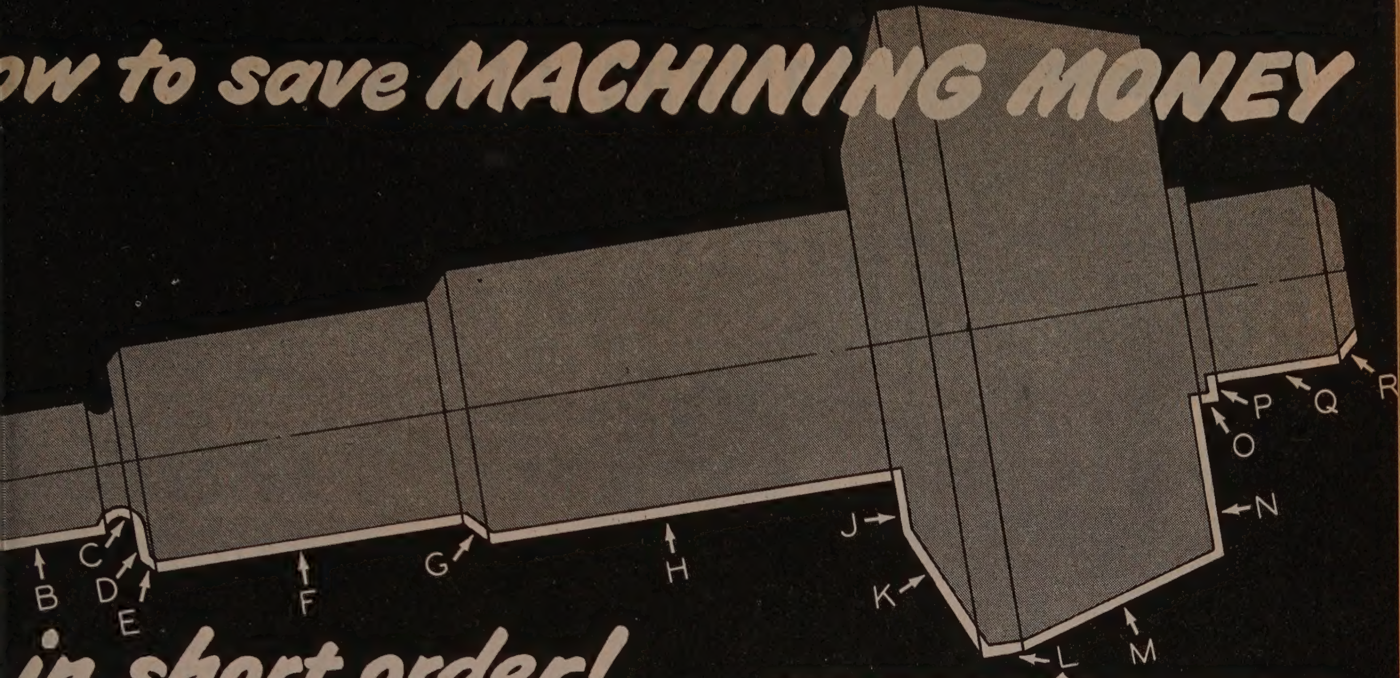
Affiliate: The Farval Corporation, Centralized Systems of Lubrication.
In Canada: Peacock Brothers, Limited.



CLEVELAND
Worm Gear
Speed Reducers

THE IRON AGE, published every Thursday by the *CHILTON CO. (INC.),* Chestnut and 56th Sts., Philadelphia 39, Pa. Entered as second class matte
Nov. 8, 1932, at the Post Office at Philadelphia under act of March 3, 1879. $8 yearly in United States, its territories and Canada; other Wester
Hemisphere Countries $15; other Foreign Countries $20 per year. Single Copies 35¢. Annual Review Number, $2.00. Vol. 162, No. 21.

ow to save MACHINING MONEY



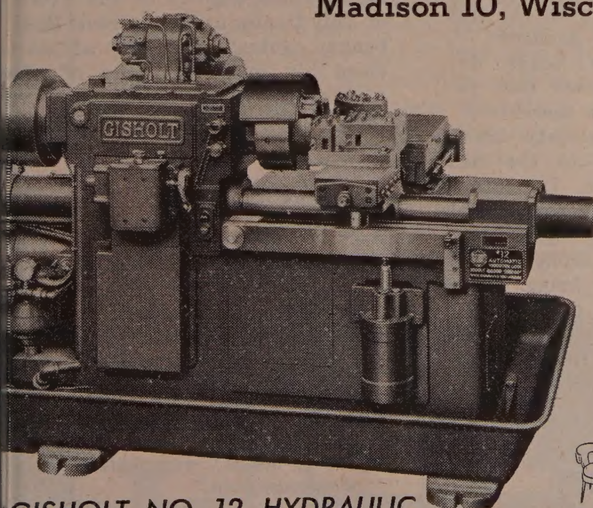
in short order!

th 4 GISHOLT HYDRAULIC AUTOMATIC LATHES

ire drive pinions—turned out in record-smashing
This production set-up does the entire job, machin-
7 surfaces in rapid, pass-along sequence at the
of 55 pieces an hour. Each machine handles one
ation, as shown at right. Two men operate all 4
ines—handle production on 8 similar parts. See
this does to costs?

one of many ways alert production men are cap-
ng on the speed and versatility of this outstanding
matic lathe. Perhaps we can help cut your costs, too.

SHOLT MACHINE COMPANY
Madison 10, Wisconsin

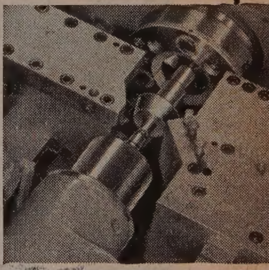


GISHOLT NO. 12 HYDRAULIC
OMATIC LATHE

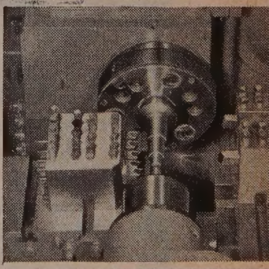
THESE 17 SURFACES

—machined in 4 different operations—
on 8 similar parts in this order

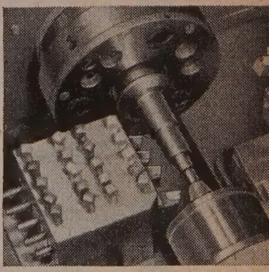
Hold between centers
using
Gisholt Work Driver.



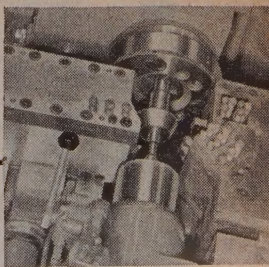
OPERATION 1—Rough turn Q-M-L with tools on the Front Carriage. Rough face K-N with tools on the Rear Slide.



OPERATION 2—Rough turn B-F-H with tools on the Front Carriage. Rough face D-J with tools on the Rear Slide.



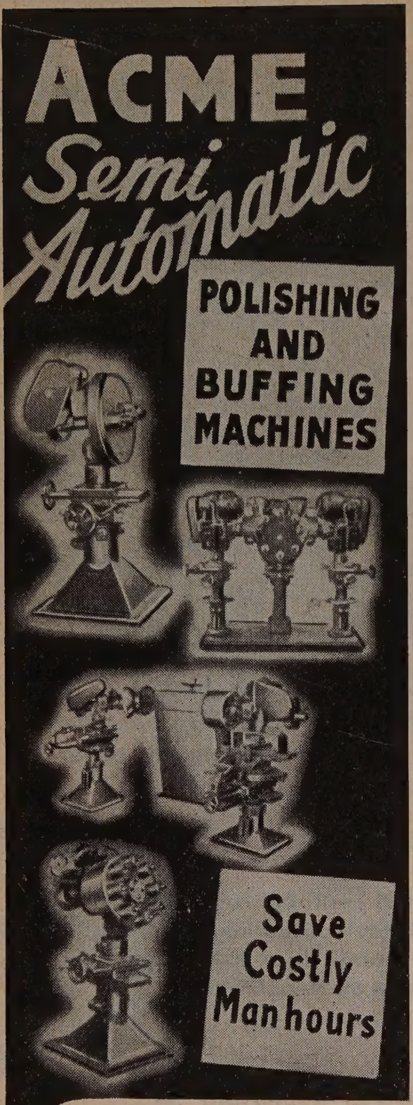
OPERATION 3—Finish turn B-F-H with tools on the Front Carriage. Finish face D and groove C, finish face J, and chamfer A-E-G with tools on the Rear Slide.



OPERATION 4—Finish turn Q-M-L, and face P with tools on the Front Carriage. Finish face K-N, size O, and chamfer R with tools on the Rear Slide.

THE GISHOLT ROUND TABLE represents the collective experience of specialists in machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed.

T LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES



ACME Semi-Automatic Polishing and Buffing Machines make high production at low cost possible on a great many jobs not suited to handling on rotary or straight line machines. ACME machine arrangements greatly reduce manual operations and effect substantial savings in man hours. The machines illustrated represent only a few of the many ACME Semi-Automatic, engineered to handle a wide variety of production polishing and buffing jobs. (Details of the full line sent on request.)

ACME Manufacturing Co.
1645 HOWARD ST. DETROIT 16, MICH.

Fatigue Cracks

BY C. T. POST

All Balled Up

• • Creation of aptronyms is a basic subconscious urge, particularly with typesetters. There can be no other explanation for the Elmira, N. Y., *Advertizer's* report on the attitude of Wilfred J. Funk, once *Literary Digest* editor, toward the balled-up plight of the modern pollsters:

> *"Funk, now a book publisher, expressed sympathy for people like Dr. George Ballup and Elmo Roper."*

All Is Not Gold

> *"To say that the steel industry will not have to change some of its thinking because of the election results would be gilding the lily.*
> *—The Iron Age, November 11, 1948, p. 144.*

> *"By and large, the reaction of the machine tool trade seemed to be that capital will not be as free as it has been, which is gilding the lily, to say the least."*
> *—The Iron Age. November 11, 1948, p. 182.*

• • After nearly sixteen years of controlled currency, your favorite family journal greets a new Democratic victory defiantly loyal to the gold standard. The Editor in Charge of Clichés is no reactionary, though. He couldn't bring himself to the point of going back three centuries to the original version of the Great Bard: *"To gild refined gold, to paint the lily . . . is wasteful and ridiculous excess."* Just as a suggestion, next time, how about "plating electropolished stainless". It's a new slant, anyhow, and more in character.

Phrenology in Steel

• • Lukens Steel Company's ad last week (p. 40) had all the shivers of a trip up the Amazon:

> *"Lukens makes heads as small as four inches and to over twenty feet in diameter."*

The missionary society should rush that message to the head hunters up the river. It could be the greatest civilizing force yet to hit the jungle. Those native chiefs have been afraid all along that the machine age would bring savage competition. They'd probably toss in the sponge and turn en masse to knitting sox for the Hottentots.

But what caught our eye was the clincher:

> *"Heads as thick as six inches are also made by Lukens Steel Company."*

You'll find the trade mark behind the right ear. Heaven help the world if their expansion program takes them into mass production.

Death Sentence

• • In their quest for ideas that are new and alive, the sentinels of your f.f.j.'s brains department know their way around. When they start snooping among the historic and the dead, they get into difficulties immediately. Take the case of Robert T. Reinhardt, whose pleasure it is to bring you West Coast news each week and whose duty it is to judge beauty contests during his spare time.

Our Robert, recently on nationwide tour, decided to take in the high spots of Washington, D. C., in a spare hour or two. He had hit them all as dusk approached—except for the Tomb of the Unknown Soldier. Tire screeching in usual f.f.j. style, he swung through the Arlington Cemetery gates, paid his respects, and was on his way out again—he thought. He skimmed the cemetery roads and by-ways, but no gate could he find. Again he wound up at the Tomb. Who did he think he was, the sentry wanted to know, General Pershing? The cemetery was now closed; only permanent residents could stay; and the visitor had better find a gate in a hurry, sir. This time Bob found the gate—locked. He found another gate—locked. Then several more the same way. The situation seemed grim. He sidled back to the Tomb, saluted the military guard. The military guard called a civilian guard. The civilian guard, satisfied that no beauty contest judge belonged in Arlington Cemetery, alive or dead, produced the magic key.

Before Bob went to Washington, he dreamed nightly of the Fourth of July lineup at the Stinson Beach beauty contest. Now he's afraid to close his eyes for fear of that nightmare where President Truman drapes a wreath around his neck.

Business Cycle

• • If you think that the election is going to make things rough in your line of work, consider what this new sheared-sheep women's hair-do is doing to the lad who put the following distress notice in the *Herald-Tribune* classified the other day:

> *"Contractor in hair nets wants work; guaranteed fine workmanship."*

And you think you're getting trimmed!

FORGING POWER

for mass production of

MASSIVE FORGINGS

AJAX FORGING MACHINES, built on the basis of mechanical soundness, deliver at high production speed the tremendous power for heavy forging with accurate alignment and minimum of deflection.

These great, rigid, powerful machines, with air clutch that provides instantaneous response to the operation of the treadle, put the production of massive forgings of complex form on the mass production basis. And the quality of the forgings, both from the standpoint of greater strength and greater uniformity, is maintained to a uniform high standard.

Forgings such as these illustrated are being produced an AJAX Forging Machines faster, better and at less cost for manufacturers of automobiles, ships, airplanes, trucks, tractors, diesels, ordnance, locomotives, agricultural machinery and other products.

Write for Bulletin 65-C.

HE Ajax MANUFACTURING COMPANY

EUCLID BRANCH P. O. CLEVELAND 17, OHIO

110 S. DEARBORN ST.
CHICAGO 3, ILLINOIS

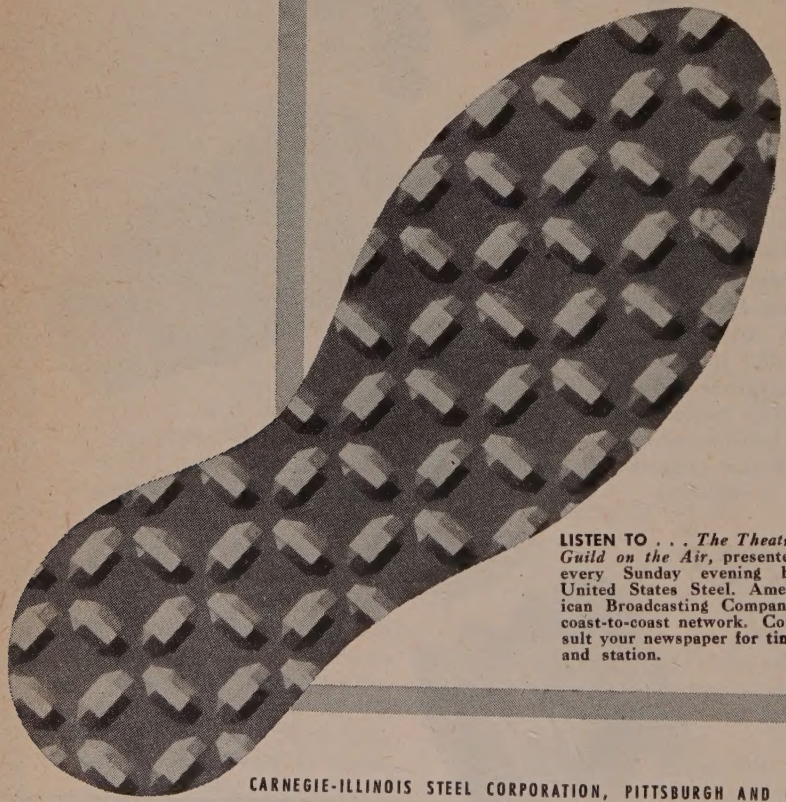
DEWART BUILDING
NEW LONDON, CONN.

A Fly is always sure footed...

. . . but it's a different story with workers in your plant. They slip and fall on smooth, slippery floors . . . then lost man-hours start piling up. Wherever sure footing is essential in your plant, install U·S·S Multigrip Floor Plate and get skid resistance and traction in all directions . . . wet or dry!

Multigrip is easily cleaned . . . there are no pockets in which grease, dirt and water can accumulate. The evenly spaced, flat-topped risers are comfortable underfoot, tend to lessen fatigue. Multigrip installations are permanent, reducing plant maintenance cost.

Get further information about Multigrip from your nearest steel warehouse or write to us direct.



LISTEN TO . . . *The Theatre Guild on the Air,* presented every Sunday evening by United States Steel. American Broadcasting Company, coast-to-coast network. Consult your newspaper for time and station.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH AND CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK
8-1162

USS

MULTIGRIP FLOOR PLATE

UNITED STATES STEEL

Dear Editor:

JOHN MILLER

Sir:

The "metallurgist named Mille mentioned in your excellent history the alloy steel industry, in the iss of Oct. 14, 1948, p. 148, is deservi of greater recognition as an able a constructive metallurgist. I think hailed originally from Scotland. Aft doing a first-class job at Pierce-Arro in Buffalo, he came into New Englar and has contributed substantially the intelligent use of carbon and all steels in mining machinery and i accessories. Call him John Mille chief metallurgist, Sullivan Machine Co., now a division of the Joy Man facturing Co., Claremont, N. H.

F. P. GILLIGAN
Secretary-Treasur

Henry Souther Engineering Co.
Hartford, Conn.

METAL FINISHING GUIDE

Sir:

We are interested in getting a co of your "Metal Finishing Manua and would appreciate your sendi this copy c.o.d. at your earliest co venience.

D. MORGENSTERN

Electroline Mfg. Co.
Cleveland

● Your copy has been sent. The cost $3.00.—Ed.

PRECISION CASTING

Sir:

Enclosed is our check for $1.00 f which please send us one copy of you booklet "Precision Investment Castin —Lost Wax Process."

H. T. KENNEDY
Preside

H. T. Kennedy Co., Inc.
New York

EXTRUSION MOLDING

Sir:

We are interested in securing copy of an article which appeared the Jan. 29 and Feb. 5 issues entitl "The Extrusion Molding Process."

C. W. GALLAGHER
Asst. Sales Manag

Reed-Prentice Corp.
Worcester, Mass.

CARPENTER'S ROLE

Sir:

Congratulations on the Oct. 1 issue. From all reports, it seems have produced a very favorable effe in the steel industry.

I was particularly interested going through the article "The All Steel Industry, Its Early History because at one time I prepared a hi tory of Carpenter Steel Co.'s cont butions to the development of the i dustry.

I believe that Carpenter was amon the first, if not the first, to develo special automotive alloy steel and th the development of the industry we hand in hand. It wasn't until 191

METAL CLEANING News

Profitable Ideas That Work with WHEELABRATOR Airless Blast Cleaning

Rubber Wringer Rolls Get A Better Bond When Shafts Are Wheelabrated

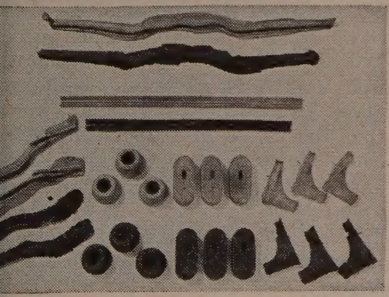
he WHEELABRATOR® Method of Airless Abrasive Blasting

HEELABRATING is a simple chanical method of abrasive isting in which abrasive is fed ough a control cage to the center the bladed "WHEELABRATOR" eel which rotates at high speed. centrifugal force the abrasive is own from the wheel, under per- t control, upon the products be- ; cleaned or finished.

w The Wheelabrator® Removes ca From Rubber—

interesting application of Theelabrator" cleaning is found an Indiana rubber company. This npany manufactures molded onge rubber products for seat shions, auto door gaskets, etc.

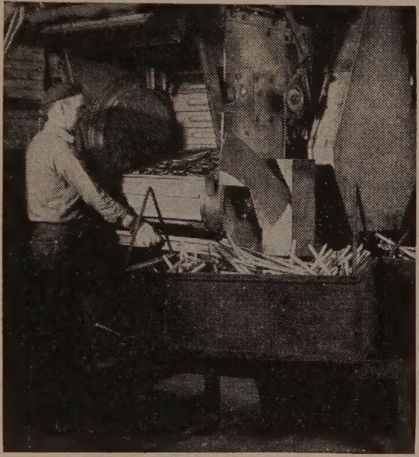
ow—Typical molded parts "before and er" Wheelabrating.



n the production of these articles, wdered mica is sprinkled in the ld to prevent sticking and to help rubber to form without defects. problem arose from the fact t the mica becomes imbedded in surface of the rubber, where it ils the appearance of the product well as making cementing difficult. For years, dry tumbling followed a liquid dye dip was used to re- ve most of the mica and return rubber to a natural black color. wever, this was a messy, slow, tly procedure.

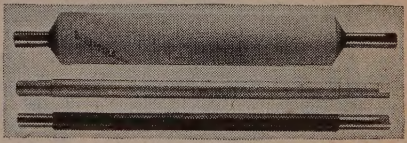
series of tests in the "Wheela- tor" laboratory showed the feasi- ty of airless blasting to remove mica. Now this single operation noves the mica, completely ex- ing the natural rubber, and ves the surface in excellent con- on for cementing.

When the makers of America's leading washer-wringers turned to "Wheelabrator" airless blast cleaning in the preparation of wringer roll shafts, they found a two-fold advantage: First, they eliminated the disagreeable working conditions attendant upon the former method of washing and pickling. Second, they found the blasted finish produced by the "Wheelabrator" provided the perfect bond-surface for applying the rubber.



Now, shafts are consistently better and more uniform. Furthermore, maintenance, which was frequent and costly with the old method used, was materially reduced.

Left—The 27" x 36" "Wheelabrator" Tumblast which provided better rubber adhesion at lower cost. **Below**—Three stages in the production of a wringer roll. The uniformly roughened Wheelabrated shaft is in the middle.



Tools Last 10 Times Longer

Surprising evidence of the thoroughness of "Wheelabrator" cleaning is found in the cost records of machine departments. In the Buffalo Forge Co., for example, only 200 cut gears could be machined before cutting tools required resharpening. Now, a "Wheelabrator" removes the scale from cut gears so completely that from 1,500 to 2,000 may be run without changing tools. In this installation, a single 48" x 42" Wheelabrator Tumblast replaced 10 tumbling barrels, and is reported to be doing a much better job in half the time.

Steel Draws Deeper When Wheelabrated

A Pennsylvania pressed steel company has found that Wheelabrating steel sheets before drawing has improved their production process. The effect of the Wheelabrating is to give the sheets an "orange-peel" surface which enables them to hold lubricants and drawing compound far better. This lessens die contact and eliminates seizing and scarring, as well as saving considerable die maintenance.

Porosity Eliminated In Aluminum Die Casting

The bug-a-boo of surface porosity in aluminum die castings is eliminated by the "Wheelabrator" shot peening process. In this process the structure of the surface layer of the casting is actually changed. As a result, minute pores, cracks, and surface fissures are closed up under the impact of the shot.

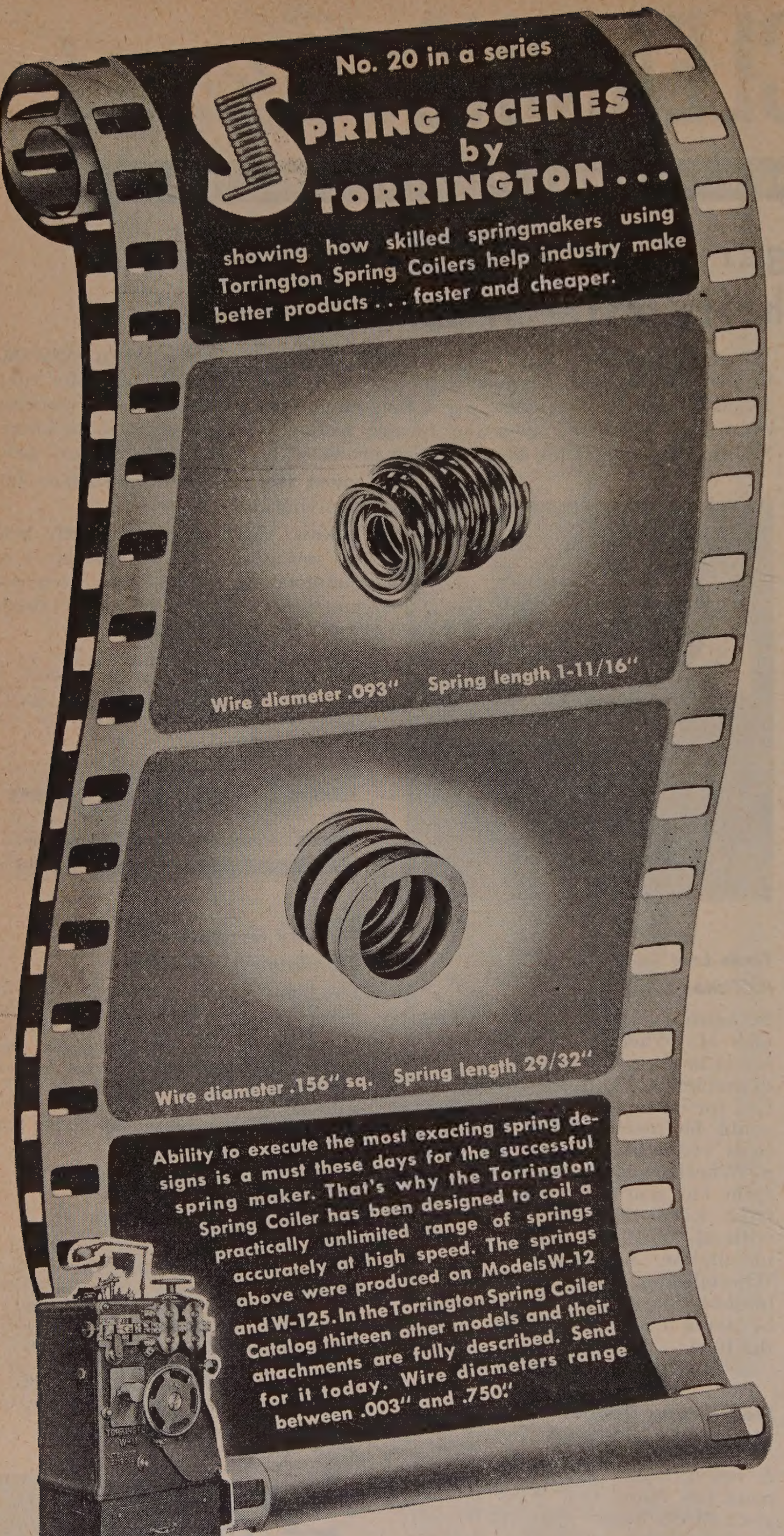
Send Cleaning Problems For Engineered Solutions

American engineers welcome the opportunity to devote their experience and American's laboratory facilities to solving the toughest metal cleaning problems. Have you such a problem? We'll be glad to find the cost-cutting, production-improving answer. Write for Catalog 74A, "The Wheelabrator—What It Is and What It Can Do."

®
THE AMERICAN MOLDER

American
WHEELABRATOR & EQUIPMENT CORP.
510 S. Byrkit St., Mishawaka 3, Indiana

Manufacturers of: WHEELABRATOR® Airless Abrasive Blast Equipment



No. 20 in a series

SPRING SCENES by TORRINGTON . . .

showing how skilled springmakers using Torrington Spring Coilers help industry make better products . . . faster and cheaper.

Wire diameter .093" Spring length 1-11/16"

Wire diameter .156" sq. Spring length 29/32"

Ability to execute the most exacting spring designs is a must these days for the successful spring maker. That's why the Torrington Spring Coiler has been designed to coil a practically unlimited range of springs accurately at high speed. The springs above were produced on Models W-12 and W-125. In the Torrington Spring Coiler Catalog thirteen other models and their attachments are fully described. Send for it today. Wire diameters range between .003" and .750."

THE TORRINGTON
MANUFACTURING COMPANY
TORRINGTON, CONNECTICUT

that other companies began comi
into the picture. Carpenter is me
tioned on page 129 as being one
the early manufacturers of variatio
of "chrome and nickel steels f
armament and automotive parts."
was my understanding however, th
Carpenter was the exclusive manufa
turer for many years. . . .

MARION W. NAGLE
Beaumont, Heller & Sperling
Reading, Pa.

BLAST FURNACE ECONOMICS

Sir:

As a member of a committee stud
ing the coke and steel industry,
enjoyed an article entitled, "Economi
of the Blast Furnace," published
your Sept. 18, 1947, issue. I wou
like, if possible, to secure three copi
of the article.

WILLIAM D. BRIDGES
Industrial College of the Armed Forc
Fort Lesley J. McNair
Washington

● Tear sheets are in the mail.—Ed.

CYCLE ANNEALING

Sir:

Will you please send a set of te
sheets on the article, "Controlled A
mosphere Cycle Annealing," which a
peared in the Sept. 9 issue.

HERBERT W. WHITNEY
Metallurgical Engine
Bliss & Laughlin, Inc.
Harvey, Ill.

SCRAP PREPARATION

Sir:

As a documentation center for t
whole of the French iron and steel i
dustry, we are most interested in
new method we have heard abou
dealing with the preparation of hea
scrap by a kind of thermit proce
The French technical literature,
well as the English one, being mu
about it for the time being, we ta
the liberty to ask you whether y
could supply us with more defin
data upon this subject, being of cou
understood that we remain at yo
disposal should you need any piece
information about the French
dustry.

P. CHAUMELLE
Mana
Center de Documentation Liderurgique
Paris

● This is not familiar to us. Can you g
us any additional details for further che
ing?—Ed.

BARBED WIRE HISTORY

Sir:

I am writing an article about
history of barbed wire and I n
some illustrations. In the June
1926 issue I found what I was lo
ing for. The article I am writing
for "The Cattleman," journal of
Texas and Southwestern Ca
Raisers Assn. For use in it I requ
permission to have copies made
three illustrations appearing in
article "Barbed Wire—Who Inven
It?" published by you June 24, 19
The first illustration shows "The

Foundry cuts annealing and firing time practically in two!

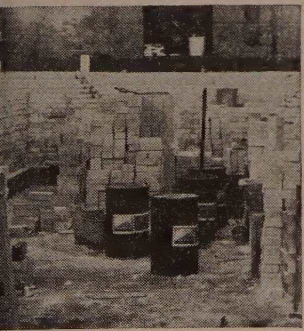
How Johns-Manville Insulating Fire Brick enables 6 new furnaces to do work formerly requiring 12

s is the story of a foundry that called on Johns-nville Insulation Engineers about the plans for their annealing furnaces.

he company had been operating 12 furnaces concted with heavy fire brick. One of these furnaces rebuilt, for test purposes, with insulating materials mmended for the job by Johns-Manville Insulation ineers. After the furnace was completed, exhaustive rating tests were made and results were compared n the old furnaces.

Test Results

old furnaces in this foundry performed with an rage annealing cycle of 120 hours. The new furnace made it possible to cut the annealing cycle to as low as 72 hours.



rtially completed furnace with M materials ready for installation.

The firing time was 80-100 hours depending upon the quality of fuel available. Average firing time in the new furnace was cut to 40 hours.

These results were so striking that the management decided to build 5 additional furnaces of similar construction.

he 6 new furnaces, as engineered by Johns-Manville, expected to fill all production needs of the plant—acing entirely the 12 old-style furnaces—resulting oubled operating efficiency.

Materials Used

furnace walls were built with thirteen and a half es of JM-23 Insulating Fire Brick. In every fifth se, vertically, a header row of brick was used with etcher course of brick to tie the wall into a solid unit.

To further decrease the heat transfer through the walls, a combination of 2″ thickness of J-M Superex Blocks and 1″ thickness of 85% Magnesia Blocks was used between the insulating brick walls and the outer steel casing.

The arch was constructed with a 9″ thickness of JM-26 Insulating Fire Brick. Over this, 5 inches of Sil-O-Cel Natural Brick was installed in two 2½″ layers. That part of the arch subject to abrasion from the powdered fuel is constructed of fire brick. In order to keep the heat transfer approximately uniform over the entire arch area, that portion constructed of fire brick was backed with a 2½″ thickness of J-M Superex Blocks. And, over this, five inches of Sil-O-Cel Natural Brick was applied.

Cutting J-M Insulating Fire Brick on the job.

The furnace bottom was insulated first with a 4″ thickness of Sil-O-Cel C-3 concrete. Over this base, ten inches of Sil-O-Cel C-22 brick were laid. A 4″ course of paving brick supplies the wearing surface for the high load-bearing insulating material used for the furnace bottom.

J-M 1626 cement was used as bonding agent.

Engineering Service

The same service performed by J-M Insulation Engineers in selecting the right combination of insulating materials to increase efficiency for this plant can be made available to you. Write Johns-Manville, Box 290, New York 16, New York.

JOHNS-MANVILLE
JM
PRODUCTS

ADVENTURES OF "CRIMPY"
THE BUFFALO WIRE CLOTH MAN
THIS TIME I'M MONEL
. . . you can see from my silvery-white color. Just about every industry uses me . . . for strainers, filters, sieves, vibrator screens, dipping baskets, conveyor belts. Brother, I've got friends!
I'M ONE-THIRD COPPER
. . . and ⅔ nickel. That gives me "oomph" (strong, tough and hard, to you). I'm much stronger than common brasses and bronzes.
SLICK & SMOOTH - THAT'S ME
See my glossy surface? It stays that way. I don't clog, either. Things just whiz through me.
MAYBE YOU CAN'T RESIST ME
but I'M resistant. Rust? Poof . . . I'm immune to it. Corrosion? High temperatures? Kid's stuff! Abrasion? Stress? I wear like . . . . MONEL!
IT'S A CINCH TO FORM & JOIN ME
Do I form easily? Say, I'm ductile. Any shape you like. What's more, I can be welded, brazed or soldered.
I COST LESS
than any corrosion-resisting wire cloth of equally high strength.
"Buffalo" Monel Wire Cloth is woven in a large range of meshes from very fine to coarse, in all standard weaves.
Buffalo WIRE WORKS CO., INC.
Manufacturer of All Kinds of Wire Cloth Since 1869
456 TERRACE
BUFFALO 2, N. Y.

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JOE M. CARMICHAEL
Northwestern University
Evanston, Ill.

● Permission granted.—Ed.

INVESTMENT CASTING STUDY

Sir:

We are interested in the article, "A Critical Survey of Investment Casting" in your May 6 issue and will appreciate it if you will send us a copy.

G. O. STEVENSON
Director
G. N. Ainsworth & G. O. Stevenson Ltd.
Hathershaw, Oldham, England

ROLLING MILLS

Sir:

We are interested in obtaining a list of steel rolling mills, showing items rolled, tonnages, etc.

M. P. SPITZEN
Gaspar Kirchner & Son
Kenilworth, N. J.

● "Directory of the Iron & Steel Works of the United States and Canada," published by the American Iron & Steel Institute, New York, is probably the best source for this information.—Ed.

STEEL MESH

Sir:

I am anxious to obtain the name of a manufacturer of steel mesh, such as is used in the making of ladies' mesh bags or bullet-proof vests.

JOHN W. WALSH
American Marietta Co.
Chicago

● A list of steel mesh makers is being sent.
—Ed.

PIPE MILLS

Sir:

I noticed in the letters to the editor section of your Oct. 7 issue that you had furnished a reader with a list of pipe and tube manufacturers located in the United States. Will you kindly send us a list also.

HARRY KEISER
Office Manager
Tioga Pipe Supply Co.
Philadelphia

● It's in the mail.—Ed.

SPARK TESTING

Sir:

We are interested in obtaining information pertaining to the spark testing of metals and would appreciate a tear sheet copy of the article "Training Spark Testers" from the July 18, 1946, issue.

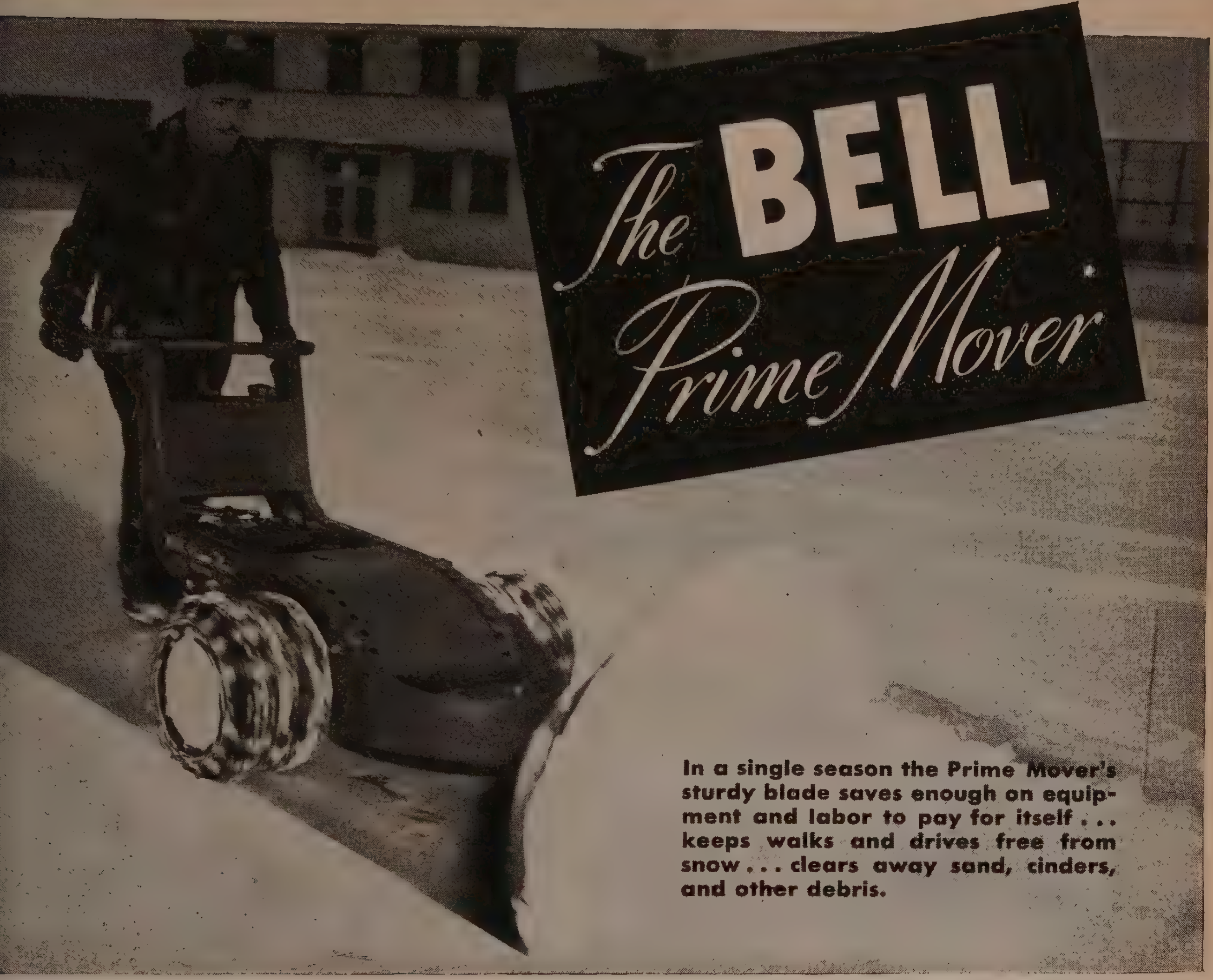
FRANK J. PRYATEL
Metallurgist
Oliver Corp.
South Bend, Ind.

FOUNDRY COKE

Sir:

Would you please advise us of the details of a recent ruling of the Supreme Court in which certain items

This feature alone can pay for



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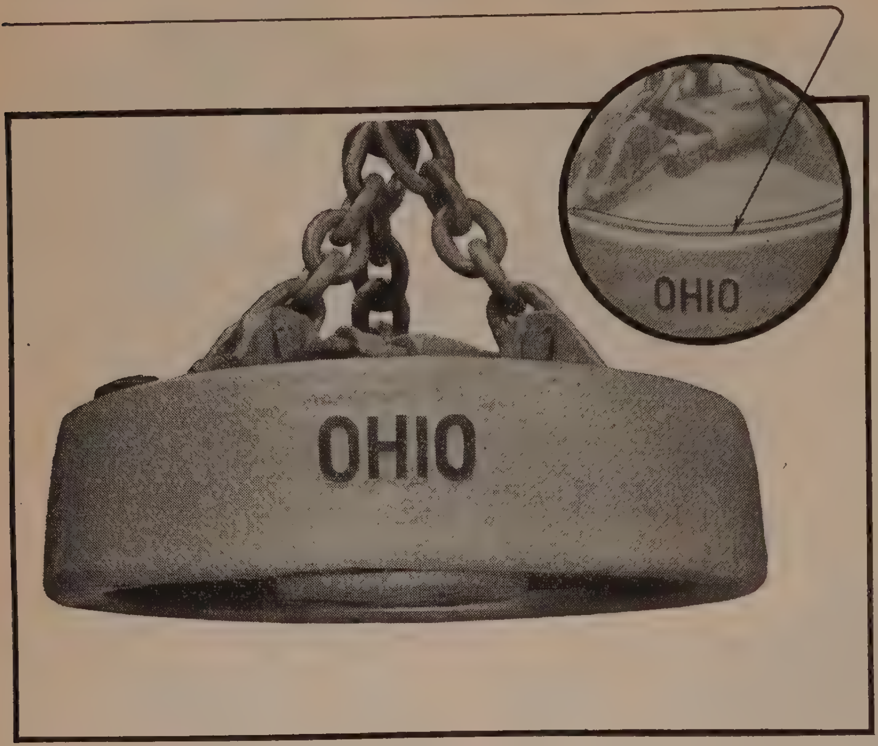

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● THE IRON AGE has been publishin
news on the decision and its interpretatio
weekly. We are forwarding dates of thes
specific articles.—Ed.

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Sir:

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of the booklet "Nonferrous Allo
Specifications" (25¢) and one "Meta
Finishing Manual" ($3.00).

PAUL M. RHODES
Purchasing Agen

Hyster Co.
Portland, Ore.

NEW STEEL

Sir:

Will you please send us three set
of tear sheets of the article "Ne
Steel Features High Strength an
High Toughness," by Payson an
Nehrenberg in the Oct. 21, 1948 issue

VIRGINIA KINCAID

E. I. du Pont de Nemours & Co.
Charleston, W. Va.

HIGH TEMPERATURE

Sir:

If tear sheets are available, I woul
like to obtain a copy of the articl
"Sheet Metals for High Temperatur
Service," by P. A. Haythorne as pub
lished in the Sept. 23, 1948 issue.

O. CUTLER SHEPARD
Professor of Metallurg

Stanford University
Stanford, Calif.

COLOR METALLOGRAPHY

Sir:

The article on "Color Metallo
raphy" by W. D. Forgeng is very i
teresting and I would appreciate you
sending me two reprints or two tea
sheets so that I may have the artic
and the color photographs. Th
article appeared in the Oct. 14, 19
issue. Will you also send me reprin
of the three articles "Summary
Heat Resistant Alloys from 1200°
1800°F," in the March 18, April
and April 15, 1948 issues.

W. A. SCRANTON
Metallograph

Thompson Products, Inc.
Cleveland

PLASTIC PATTERNS

Sir:

We would like to obtain two se
of tear sheets of the articles "Pre
sion Casting with Plastic Pattern
and "High Speed Induction Brazi
with Interchangeable Fixtures"
pearing in the Oct. 7 issue.

A. KIPP
Technical Information Cen

Philips Laboratories, Inc.
Irvington on Hudson, N. Y.

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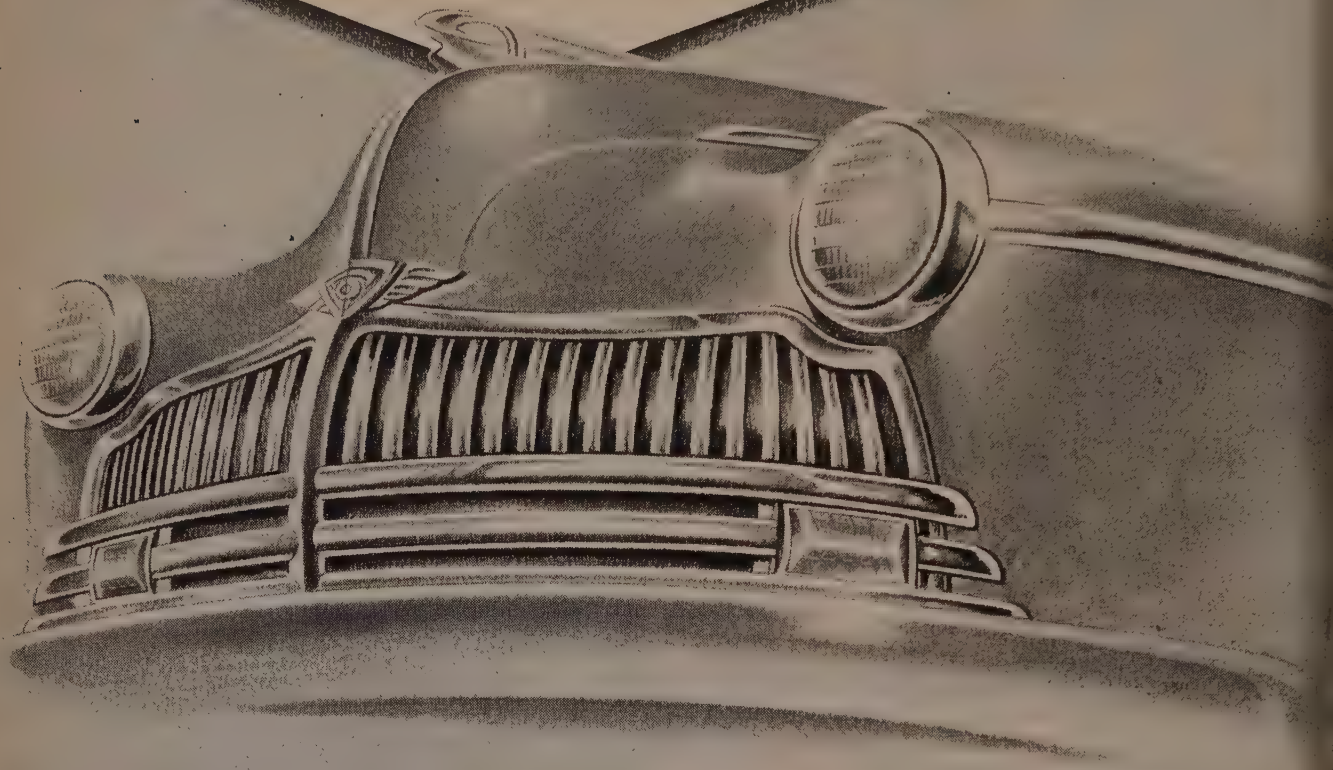
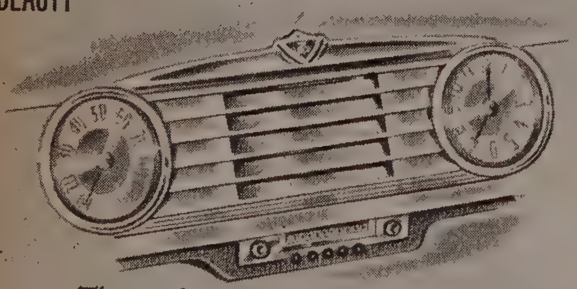
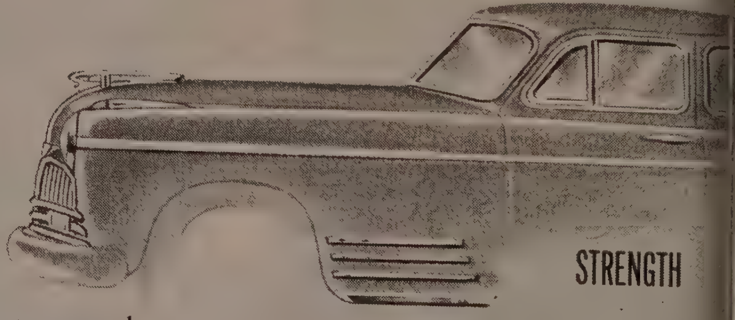
Out in Front

WITH SHARON STAINLESS STEEL







The makers of automobiles, like all manufacturers whose products must have strength, beauty and be weather-resistant, are putting Sharon Stainless out in front where quality counts.

Sharon Stainless has a high resistance to rust and corrosion—retains its original finish year after year. It is many times stronger than plain steel—yet easily adaptable to almost any shape or form.

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Is It a Mandate?

LABOR and one faction in the Democratic Party claim that the election results constitute a "mandate" from the people, that this "mandate" calls for repeal of the Taft-Hartley Act and enactment of the left-wing price control and tax program. The victorious party will be well advised to go slowly in discharging this "mandate."

In the first place it is reasonably clear that the victory of Truman was a personal tribute to a courageous fighter who carried on against overwhelming odds, not the least of which was the lethargy of top flight politicians in his own party. Without detracting from the President's magnificent effort, it is not unfair to say that the Republicans lost the election rather than that the Democrats won it. On the basis of votes cast in other presidential elections, it was expected that not less than 51 million voters would go to the polls. Actually only 46 million voted.

In spite of the ridicule directed at the professional pollsters, the fact is that they did a good job in gaging *voter intentions*. There is no reason to suppose that the techniques which experience has proven sound should suddenly go completely haywire. It is reasonable to suppose that a large majority of those who did not vote were Republicans and their failure to go to the polls spelled the difference between *intention* and *deed*.

The final count shows that Truman received less than half of the votes actually cast. In five states—California, Illinois, Ohio, Nevada, and Idaho, with a total vote of 10,807,801 cast for the two major candidates, the President's plurality was 107,859, a margin of approximately one per cent. These five states have an electoral vote of 85. Had one voter in every 200 in these states changed his choice, these 85 electoral ballots would have gone to Dewey and left the final count Dewey 274, Truman 219.

The apathy of the voters was overwhelmingly on the Republican side. This was due, we believe, to the manner in which the G.O.P. waged its campaign and to a fundamental fallacy underlying the Republican propaganda thesis. The Dewey high command took victory for granted, a presumption which many voters resented. In the second place, the G.O.P. leadership refused to tell the voters what they were getting, except in terms that were so general and equivocal as to have little meaning. Keeping the campaign on "a high plane" also kept them from giving the public compelling reasons for changing administrations, reasons which the record of the last 16 years provides in abundance.

That these are the valid reasons for Truman's success and not his advocacy of Taft-Hartley repeal or reimposition of controls is indicated by his ability to maintain his margin over Dewey after the counting left the big cities. The farmers certainly did not vote for him because they thought organized labor was being abused. In the state of Arizona the voters gave the President 56.7 per cent of the ballots cast for major party candidates, compard with 52.3 per cent for the country as a whole. The voters of this state at the same time had a chance to express themselves on the only clear-cut issue of the campaign, namely, the power that organized labor may enjoy. They gave thumping majorities for three anti-labor referenda. Obviously the Truman majority here rested not on issues but on personality.

Joseph Stagg Lawrence

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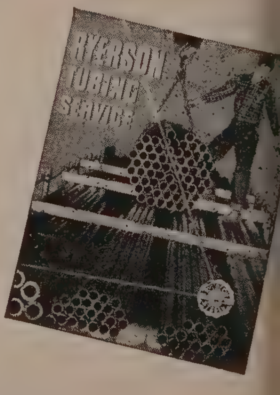
Do you have a copy of the Ryerson Tubing booklet just off the press? Its 32 pages are packed with useful information on tubular products, both carbon and stainless—tolerances, mechanical properties, helpful suggestions on grades and sizes, Ryerson stocks, etc. Write for yours today. ▶



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RYERSON STEEL

NEWSFRONT

While U. S. Steel Corp. will continue to strive and hope for legalized basing ts, it is not counting on them. Wherever possible, it appears to be taking mill to the consumer. This is evidenced by the complementary cold reduction s on the West Coast. Both will have capacity of more than 300,000 tons. The at Pittsburg, Calif., will specialize in tinplate while the one in the Los les area will concentrate on cold rolled steel. Both specialties are suited he consuming areas in which the mills are located.

Progress in engineering of automotive power plants is reflected in the new ne recently introduced by Cadillac. The previous Cadillac engine had 346 cu and developed 150 hp. The new high compression engine has 15 less cubic es, yet it develops 160 hp. It weighs nearly 200 lb less than the old engine occupies less space. In addition, using a 7.5 compression ratio, the new ne offers 15 to 20 pct greater fuel economy.

The Office of International Trade is considering the prohibition of exports of ore. This would be a precautionary measure since iron ore has been exported to Canada during the past several years and exports to that country are not cted by U. S. controls. Exports of iron ore last year amounted to 2.8 million and for the first 6 months of this year 1.6 million tons--all to Canada.

Dow Chemical Co. has informed the government that immediately after the war it d have cost $400,000 to place the Velasco, Tex., magnesium plant in a standby ition. But they estimate present cost of the project to be $5 million. The er cost of reactivation now is due partly to the need for rebuilding cells r attack by magnesium chloride. Some power plant facilities would also have e installed since that was largely second hand equipment originally and has in use by Dow under lease to supply its Freeport, Tex., operations. Silver bars had been in use in this plant but these have been removed.

In addition to the automotive companies that have already arranged for Pittsh district plants, both Briggs Body and Kaiser have been scouting the area. able sources indicate that the New York Air Brake Co. has already made plans ove to Pittsburgh. Whether f.o.b. mill steel sales go or stay appears to make le difference now--rising freight rates are calling the turn.

Scrap suppliers to conversion ingot makers are working on a 10 to 1 ratio. every 10 tons of scrap they sell at market price--they get back 1 ton of ts at mill price.

The Geneva, Utah, plant of U. S. Steel Corp. is gaining increasing stature in re plans of the corporation. Plans call for the Geneva plant to supply semished steel for the operation of both of the Corporation's new cold reduction s in California.

The future is almost certain to witness more automobiles and automotive parts uction in Pittsburgh and other steel producing centers--and more steelmaking etroit. Important developments in both Pittsburgh and Detroit are currently ng place. Detroit is beginning to be concerned about its position as a plus et for scrap.

A new process for manufacturing prealloyed steel powders directly from the en state is now in the production testing stage and may soon be put on the et.

Freight car production which fell about 1000 units short of the 10,000-car a n goal in October will be back near 10,000 this month if no further labor oles intervene.

Some segments of the machine tool industry have been renewing contracts with ine tool dealers in Germany which would seem to tie in with resumption of uction on a supervised basis in the Ruhr.

Participation of steel companies in iron ore beneficiation research programs eginning to look more and more like a public relations or industry relations ure in view of the current interest in foreign ore deposits.

Die Setting and Economical

Improper die setting in punch press operations drastically reduces die life, and can be the cause of out-of-parallel press frames, misalignment of ram ways to the press bed and extremely high production and maintenance costs. Some "Do's" and "Don'ts" for the die setter are given in this article, and a program for training die setters is outlined.

◦ ◦ ◦

By E. H. GIRARDOT
Punching, Tool and Die Div.,
General Electric Co., Schenectady

◦ ◦ ◦

THE importance of proper setup of punch press tools is frequently underestimated. Extra costs and other losses that are actually caused by improper die setup are often erroneously charged to faulty die design or construction, because the troubles experienced cannot always be clearly traced to the setup. While broken or chipped die sections may be caused by faulty design, construction, or the use of tool steels not suited for the job at hand, an analysis of the die setting methods used should be made before such conclusions are reached.

A typical press shop that produces a varied general class of punched parts carries a heavy investment in machinery. The cost of individual machines varies from $1000 for small O.B.1. presses to upwards of $50,000 for large automatic and double action presses. In addition, considerable continued expense is involved in keeping the presses in good operating condition.

This press maintenance is often increased because of such factors as wear of crankshaft, pitman bearings and ramways; and misalignment of ram and bed faces, spring press frames, and bolsters that result from such improper setup procedure as the use of bolsters providing in-

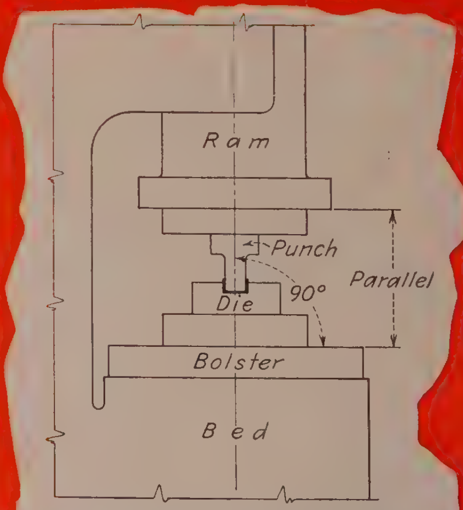

FIG. 1—Theoretical relationship of ram motion, ram and bolster faces at bottom of work stroke. A solid line of metal exists between the ram and bolster through the punch and die members and the punching. Ram and bolster faces are parallel and the ram slide motion is at right angles to the bolster. Actually, some deflection is experienced.

Punch Press Operation

sufficient die support and the overloading of presses by too deep a setting on jobs which bottom.

Although it would be difficult to establish definite figures representing normal maintenance costs in any shop, a careful examination of actual expenditures shows many items traceable directly to press overloads resulting from improper setting of the dies. Reduced maintenance expense can thus be anticipated through the inauguration of a regular training procedure for die setters.

Forming, bending, embossing and other die types, wherein the work is bottomed, require considerable experience on the part of the die setter to insure proper setup. Tests made in hydraulic presses to determine the pressures required by various dies which bottom indicate that little appreciable effect is noted in the punching after overloads as great as 100 pct if the punching is of sufficient area to resist coining.

For example, a formed part was satisfactorily produced with a pressure of 30 tons. Even when this pressure was increased to 60 tons, the punchings produced at each pressure could be clearly identified from each other.

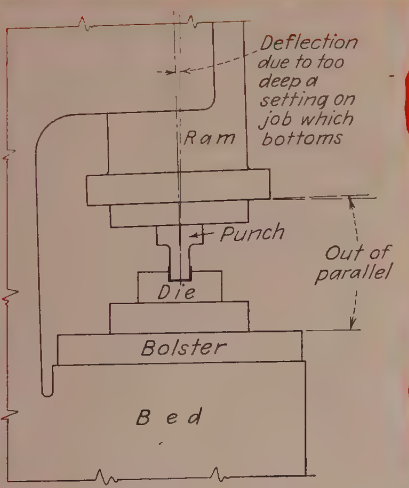

FIG. 2—Too deep a ram setting on jobs that bottom cause press frame deflection since the metal through the die and punching between the ram and bolster is incompressible. Excessive deflection may result in a sprung press frame or even breakage of the frame or die.

The setup of such dies tests the skill of the die setter, since the common screw-adjusting pitman must be set by feel. All presses are so designed that the deflection of their members will remain well within the elastic limit of the materials of which they are made, when exerting full rated pressure. This is shown in fig. 1. If the ram is set too deeply, the press frame and bolster would be deflected to accommodate this excessive depth setting, resulting in press overload, as shown in fig. 2.

Referring again to the part that required 30 tons to form, and assuming that it is set up in a 35-ton O.B.1. press, good judgment on the part of the die setter is essential if press overload and excessive deflection are to be avoided. Too deep a ram setting would not materially improve the appearance of the punching, but the excessive deflection caused by this improper setting might exceed the elastic limit of the material in the press frame. The effects of too deep a ram setting are shown in fig. 2. In this event, the frame would assume a permanent set, resulting in misalignment of the ram and bed faces. This misalignment might assume either of two forms, or a combination of both.

If both sides of the press frame were to stretch evenly, an out-of-parallel condition of the ram and bed faces from front to back of the press would result. If only one side of the frame were stretched, the out-of-parallel condition would be from right to left. An uneven stretch of the frame sides would induce a combination of these two forms of misalignment.

Inspection of presses of this type has shown that out-of-parallelism between the ram and bed faces is a common fault, indicating that these presses were being overloaded.

Another objectionable condition caused by overloading is a misalignment of the ram ways to the press bed, which causes an improper angular motion of the ram in relation to the bed. Since a major overhaul is required to restore a press misaligned because of overloading, it is essential that overloading be avoided in order to keep press maintenance costs at a minimum.

If a misaligned press of this type was used for blanking work, particularly on thin materials, a greatly reduced number of punchings between die grinds would result, because the punch and die members could not be properly aligned. Economical operation of blanking dies can be attained only if the cutting faces of the punch and die members are maintained parallel to each other during the cutting cycle, and if the clearance provided between the punch and die be evenly divided around the contour.

Some dies may have shear provided on either the punch or die to reduce the cutting pressure required. In this event, it is still essential that the die clearance be evenly divided around the blank contour to avoid injurious metal-to-metal contact between the punch and die members.

Parallelism of punch and die members and an even distribution of the die clearance cannot be attained if an out-of-parallel condition exists in the punch press. A die clearance of about 6 pct of the material thickness is commonly used, so a clearance of only 0.0015 in. is usually provided at any point between the punch and die when cutting 0.025 in. thick material. It is evident that only a slight misalignment would result in metal-to-metal contact, with resultant injury to the cutting edges. The results of improper setup might thus be reflected in decreased die life and increased die upkeep costs, as well as in the additional maintenance costs required to restore the press to proper alignment.

Draw dies for round shells that are run in single-action presses equipped with cushions require special setup knowledge. Blankholding pressure must be evenly distributed over the blank area and of sufficient force to prevent wrinkling without retarding the natural flow of material into the die. This optimum pressure can only be determined by trial, with reliance on the experience and good judgment of the die setter.

Adjustment of blankholding pressure is a relatively simple matter with pneumatic or hydraulic cushions, but becomes more difficult with spring cushions. In the latter case, pressure is varied by the amount of initial compression given to the springs by manual adjustment.

Draw, or blank and draw dies that are run in double-action presses require the same critical attention to proper blankholding pressures. Here, however, adjustment is made by means of studs located in the four corners of the blankholder ram. Obviously, considerable skill is necessary to insure an even distribution of force over the blank area. Regardless of whether a single or double-action press is used, however, the application of either excessive or insufficient blankholding pressure results in an abnormally high percentage of rejected work.

The setup of draw dies in double-action presses is another situation that is often mishandled. The draw punch must enter the die centrally, so that the clearance is evenly distributed about the contour. The use of dummy shells or strips of material, inserted around the contour between punch and die, is not recommended since no assurance is given that the punch ram is not crowded to one side in its ways.

A more satisfactory method is to mount the draw punch securely in its ram, then lower it into the draw die and use feelers to divide the clearance evenly before clamping the die. In this manner, centrallized location is insured, since the punch ram is hanging free in its ways and the die is located to suit the punch.

Draw work on other than round shapes may impose more difficult blankholding problems. It is sometimes necessary to vary the pressures over the blankholding area and to apply greater pressure at certain points. Such jobs further complicate the setup problem and require maximum experience and the use of extreme good judgment on the part of the die setter.

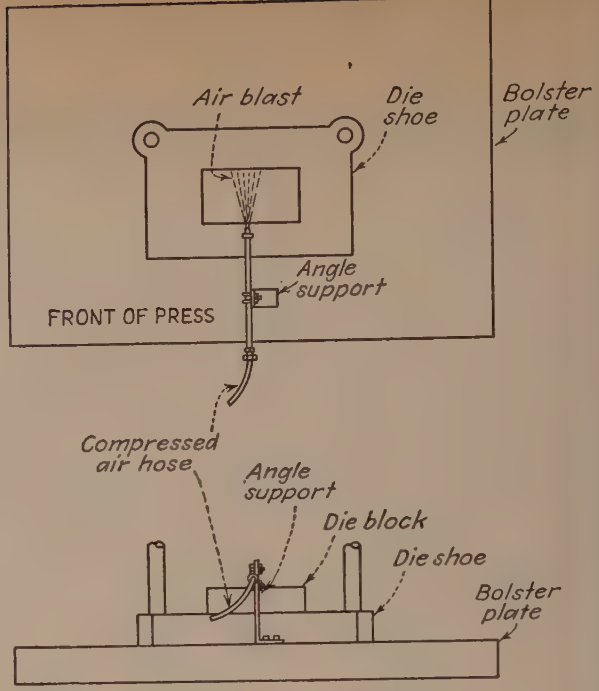

FIG. 3—Shown here is a common method of setting up an air blast for removing punchings from dies during the up-stroke of the ram. Mounted on the bolster by the die setter, its efficiency varies with his skill, since he must aim the blast at each setup. Vibration during operation may cause the nozzle to shift, with resultant troubles.

Dies also represent a heavy investment, ranging from $100 for simple dies to upwards of $10,000 for the larger and more complicated types, particularly those for cutting operations. Die life and maintenance, major items in press operation, may be directly affected by careless or improper setup. On dies which bottom, such as form dies, excessive pressures tend to coin the punch and die sections into the softer material of the die set, with subsequent misalignment of the punch and die members.

In the case of cutting dies, improper alignment of the punch and die members in setup may seriously affect die life and maintenance costs. For example, since a die clearance of 6 pct of the material thickness is recommended there is a clearance of only 0.0009 in. between the punch and die when cutting 0.015 in. stock. This means that almost perfect alignment of the die members must be established during setup, and maintained when clamping them to the ram and bolster.

Extreme caution should be exercised to insure that the upper holder is securely clamped flat to the ram face before the lower holder is fastened to the bolster. This is particularly true in the case of punch holders held to the ram by means of shanks. Dirt or burrs on the shank, the top surface of the punch holder, the ram face, or in

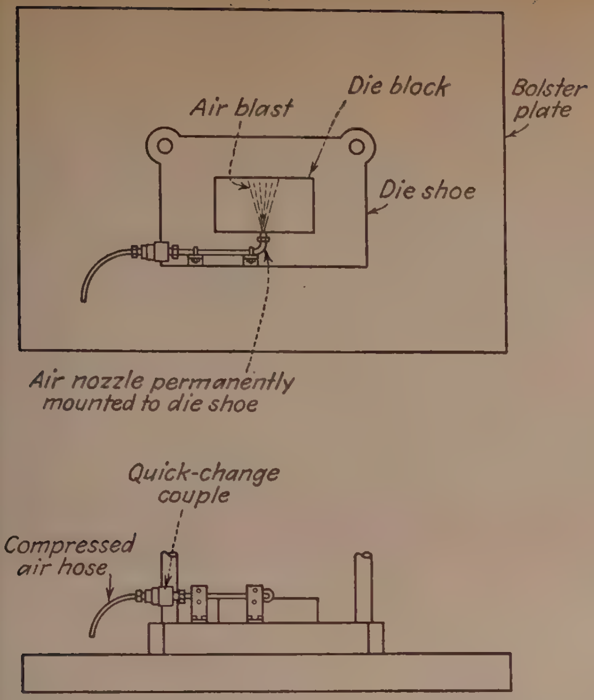

FIG. 4—A recommended method for removing punchings from the dies by air blast is where the nozzle and connector tube is permanently mounted on the die by the die maker. The die setter merely connects the air supply by a quick-change coupling. This gives positive assurance of trouble free air ejection in addition to reducing die setting time.

the ram shank hole may all keep the punch holder slightly out of alignment when the die is set up. Under cutting pressure, the punch holder may be forced into proper relation with the ram, causing misalignment with the die. Very little movement is required to result in metal-to-metal contact between the punch and die, with a resultant decrease in the number of punchings produced between grinds.

Improperly functioning dies and frequent die or press breakdowns are often reflected in dissatisfied press operators. Most press work is performed on a piece work basis and the operators develop a work rhythm in keeping with the job at hand. Improper feeding material, faulty ejection of completed blanks, or other minor operating troubles cause a break in this rhythm. Two methods of removing punchings from the dies by air blast are shown in figs. 3 and 4.

The die setter is in an excellent position to contribute towards the design of better and more trouble free dies. He is aware of operating troubles that occur under production conditions and should call these to attention, so that they can be corrected. Future designs for similar tools can then be modified to overcome the troubles.

Operating troubles involve further losses for the plant in production delays and a less efficient utilization of equipment. Control of these troubles through more careful, accurate die setting and better die design and construction tends to improve the morale and efficiency of the press operators.

Safety is necessarily a prime consideration in punch press work, and the die setter holds a prominent position as a key safety man. It is his responsibility to mount proper guards to provide maximum protection with a minimum of interference of the operator. Primary instruction in safety practices and operating methods can best come from him to the press men.

Most shops have no established routine for the training of personnel in die setting procedures. Quite frequently, press operators who have set up dies for themselves are designated as die setters. Their experience then becomes a matter of picking up sufficient information to enable them to carry on their work. This information is usually obtained from other die setters who also have had little or no special training in this work.

An organized program for instructing personnel in die setting provides the best means of insuring against losses due to improper setup. Such a program should include both instruction and practice on a number of points, including the following:

I—General Theory of Presses and Dies—Principles of every type of press and die used in the particular shop should be covered, with emphasis on both proper and improper conditions. For example, if the die setter understood the purpose and function of die clearance on cutting dies, he would have more incentive for being careful in his setups to ascertain that this clearance was evenly divided around the die contour. Again, if he understood that excessive pressure on a bottoming type of die contributed nothing to the accuracy of the punching, but would damage the press and/or die, he would be more on the alert to avoid this condition in his set-ups.

II—Clamping Theory—Include proper and improper clamping procedures. Punch holders held to the press ram by shanks only must be pressed tightly against the ram face and securely fastened before clamping the lower member. Those bolted to the ram should have these bolts securely tightened, while the lower die member is free to adjust itself to any movement of the punch holder during the bolting process. The lower member can then be clamped.

Only substantial bolts, clamps and clamp supports should be used. All the clamps on a die member should be lightly drawn up before any of them are tightened.

III—Setup of Press Attachments—In setting up mechanical feeds, use and adjustment of material guides; adjustment of material movement; release of the material by the feed fingers or rolls to allow final and accurate positioning by the pilots provided in the die should be understood. The principles of air, hydraulic and spring cushions should be studied. Caution must be exercised that all pins between the cushion and the die pressure plate are of equal length, and the proper method of adjusting pressure of each type of cushion should be known.

IV—Setup of Press Work Area—In order to obtain maximum efficiency on certain types of

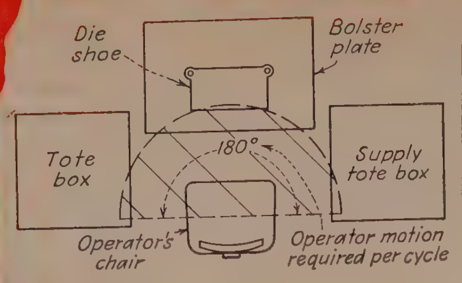

FIG. 5—This is an inefficient work place setup for small work. A 90° motion of each hand is required to manually feed and remove the punching from the die. Such setups may cause needless operator fatigue, with slow press operation.

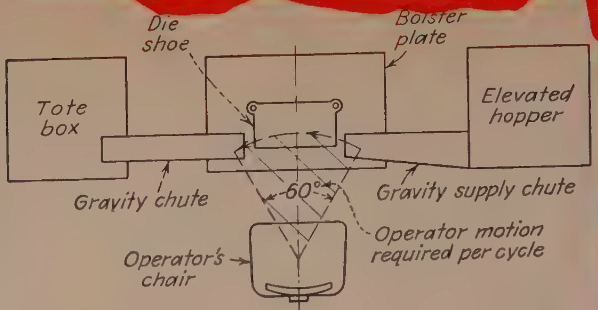

FIG. 6—In this work place setup for small work, only a 30° motion of each hand is required. Parts are carried to the feeding station by gravity chute from a hopper, or by conveyer. Drop delivery may be effected by gravity chute. Such setups permit maximum speeds and reduce operator fatigue.

jobs, special consideration must be given to the setup of the work place area. The placing of the material supply and the manner in which the material is removed from the die become important.

The operator's motions should be limited, as far as possible, to the simpler man-motions, such as those involving finger, wrist, lower and upper arm. The use of properly located supply racks and conveyers is important. The operator should not be required to bend over or turn around to reach for a new part or to put down the completed part, if it can be avoided. Such an inefficient work place setup is shown in fig. 5. When a satisfactory work area setup has been made for a particular job, the die setter must be able to duplicate it whenever the same or a similar job is set up in the future. A typical satisfactory work place setup is shown in fig. 6.

V—Safety Practices—Since the die setter can be considered as a key safety man, he should be given intensive and repeated instruction in safety practices. Careless and hurried setups should not be tolerated in modern punch press practice, because they are responsible for a large portion of press and die maintenance. An adequate training program, planned to suit each individual shop condition, will readily pay dividends in the form of more economical punch press operation.

Among the particular advantages which could result are reduced press maintenance costs, reduced die maintenance costs, increased die life, particularly on cutting dies, minimized scrap losses by reducing the quantity of bad punchings produced and effecting best material utilization, more trouble free press and die operation, reduction of production delays, improved safety record, improved employee relations, and improved morale and efficiency of employee.

Joining of High-Strength Aluminum

THREE approaches to the improvement of welded joints in high-strength aluminum: (1) The development of improved filler metal; (2) effects of various heat treatments, and (3) the use of unorthodox joining methods including cold pressure welding, have been under investigation. While work on the two first approaches remains far from complete, promising leads appear to have been uncovered. Unorthodox welding techniques, such as cold pressure welding, have not yet seemed to offer definite hope for improving the quality of such joints.

As part of the study carried out by Battelle Memorial Institute for the Dept. of the Army, determinations were made of the strength properties of joints in thick high-strength aluminum alloy plates, welded by conventional processes with currently available filler materials.

Conventional welded joints were found to have only from 5 to 30 pct of the ductility of the parent plates, emphasizing the need for filler-rod alloys that will deposit more ductile weld metal. "Alcoa 716" filler rod showed superior results to those obtained with 43S filler rods or alloys of identical composition to the parent metal.

Tensile efficiencies of welded joints were found markedly improved by full heat treatment. No work has been done yet to determine possible advantages of mechanical working welds to improve joint efficiencies.

The results of these investigations are published under the title: "Investigations on the Welding of High-Strength Aluminum Alloys," PB92831, and can be obtained in photostat form for $8.75 or in microfilm form for $3. Orders should be addressed to the Library of Congress, Photoduplication Service, Publication Board Project, Washington 25, accompanied by check or money order payable to the Librarian of Congress.

Graphitic Nitralloy

An alloy possessing the properties of nitrided Nitralloy together with the added feature of easy machinability is described in this article. The composition of this aluminum-chromium-molybdenum alloy, called Graphitic Nitralloy, offers flexibility in that a range of physical properties and combined carbon:graphitic carbon ratios can be obtained. The author discusses the metallurgical characteristics of this interesting metal and indicates the correlation between physical properties and microstructure.

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THE success of graphitic steels for tool steel applications in industry suggests the possibility of evolving composition amenable to nitriding. An investigation was recently conducted, resulting in the development of a steel composition that can be partially graphitized by a simple heat treatment, and nitrided to possess the properties of nitrided Nitralloy, along with easy machinability. An interesting feature of this new alloy, called Graphitic Nitralloy, is that the graphite particles serve as a lubricant, or in case they become dislodged, the microscopic pits serve to retain oil. Service results, especially in seal ring applications, support these claims.

In an alloy of this type, containing aluminum, chromium and molybdenum as alloying elements, particular care must be exercised to adjust the amounts of silicon and aluminum (as the graph-

TABLE I

Physical Properties Obtained With 6-lb Heat of Graphitic Nitralloy

C	Mn	P	S	Si	Al	Cr	Mo
1.17	0.52	0.016	0.011	1.28	1.35	0.22	0.23

Sample No.	Heat Treatment	Hardness, Rc	Graphitic Carbon, Pct
1	1650° F—1 hr, oil quench, 1375° F—5 hr..........	9.5	0.86
2	1650° F—1 hr, oil quench, 1375° F—10 hr.........	8.5	0.91
3	1650° F—1 hr, oil quench, 1375° F—15 hr.........	7.3	1.01
4	1650° F—1 hr, oil quench, 1375° F—20 hr.	6.5	1.13

Sample No.	Y. P., Psi	T. S., Psi	Percent Elong. (2 in.)	Percent R. A.
1	72,000	91,000	18.8	23.0
2	69,800	86,800	19.3	26.4
3	66,400	83,700	18.5	22.8
4	67,400	83,400	18.5	21.5

TABLE II

Physical Properties Obtained With 40-lb Heat of Graphitic Nitralloy

C	Mn	Si	Al	Cr	Mo
1.31	0.53	1.20	1.49	0.43	0.26

Sample No.	Heat Treatment	Hardness, Rc	Graphitic Carbon, Pct
1	1650° F—1 hr, oil quench, 1375° F—5 hr	19	0.78
2	1650° F—1 hr, oil quench, 1375° F—10 hr	17	0.84
3	1650° F—1 hr, oil quench, 1375° F—15 hr	15	0.84

Sample No.	Y. P., Psi	T. S., Psi	Percent Elong. (2 in.)	Percent R. A.
1	84,000	108,500	17.5	19.4
2	72,800	100,500	17.0	17.4
3	71,500	97,800	16.5	18.8

FIG. 1—Photomicrograph of the longitudinal section of sample No. 1, table II. Total carbon—1.31 pct; graphitic carbon—0.76 pct. Unetched. 100X.

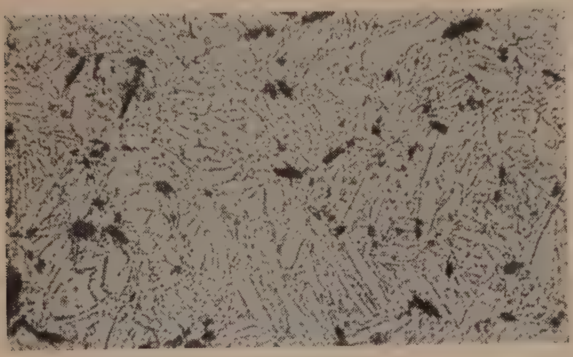

FIG. 2—Same as fig. 1 except that specimen has been etched in Nital and the magnification is 500X.

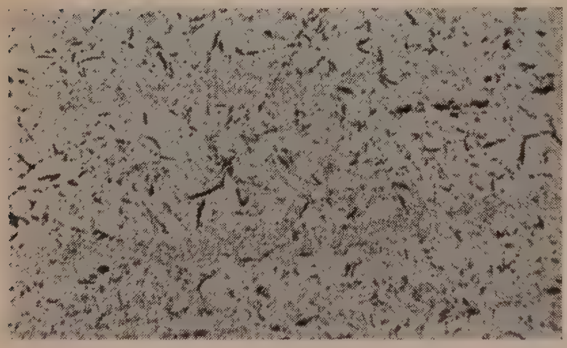

FIG. 3—Photomicrograph of the longitudinal section of sample No. 2, table II. Total carbon—1.31 pct; graphitic carbon—0.84 pct. Nital etch. 100X.

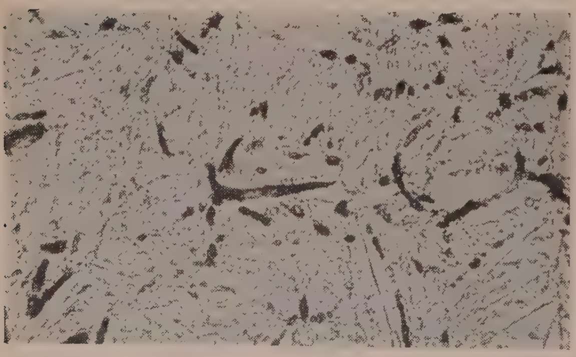

FIG. 4—Same as fig. 3 except that magnification is 500X.

itizing elements) against chromium and manganese (which are carbide stabilizers), in order to achieve the desired microstructure in the heat-treated product. Also, the composition has to possess satisfactory nitriding characteristics.

In the study described in this article, some 33 different compositions were made in an induction furnace. Preliminary data were obtained from small ingots weighing about 6 lb each; selected compositions were made in larger amounts, approximately 40 lb. The ingots were forged into ½-in. square bars at a temperature not exceeding 1950°F. Specimens were examined in the as-forged state, and after quenching in oil from 1650°F and tempering at 1375°F for 5 hr. This heat treatment was selected after a preliminary investigation had been made to determine the best quenching and tempering temperatures to provide the desired microstructure. The depth-hardness characteristics were determined after nitriding for 48 hr at 975°F.

As a result of the preliminary investigation the composition range selected as the most suitable one for nitriding is: 1.25-1.50 C, 1.25-1.50 Si, 0.40-0.60 Mn, 1.00-1.50 Al, 0.20-0.40 Cr, 0.20-0.30 Mo.

The carbon was in the combined state in the as-forged condition. After oil quenching from 1650°F and tempering at 1375° to 1400°F, the combined carbon was reduced to 0.30 to 0.50 pct. The remainder of the carbon was in the form of temper carbon.

Such a structure is amenable to further heat treatment after rough machining if a higher tensile strength is required. Reheating to 1500°F, followed by oil quenching and then tempering at 1000° to 1300°F will increase the hardness and tensile strength over those provided by the graphitizing treatment.

In order to investigate the mechanical properties of Graphitic Nitralloy, two heats, one of 500 lb and one of about 1000 lb, were made. Table I shows the results obtained with the smaller heat. Bars of 1-in. and 2-in. diam, were heat treated by oil quenching from 1650°F and tempering at 1375°F, and were then machined into standard 0.505-in. diam tensile specimens.

Table II gives the results obtained with the

TABLE III

Effect of Heat Treatment on Hardness and Carbon Distribution of a 22-ton Openhearth Heat of Graphitic Nitralloy

Treatment	Brinell Hardness	Total Carbon	Graphitic Carbon	Combined Carbon
As rolled (1 in. diam.).....	363	1.26	0.02	1.24
Oil quenched from 1650° F; tempered at 1375° F for 10 hr.................	229	1.24	0.66	0.58
As rolled (2 in. diam.).....	363	1.24	0.01	1.23
Oil quenched from 1650° F; tempered at 1375° F for 5 hr.................	207	1.20	0.77	0.43

larger heat. Bars, 1 in. in diam, were quenched from 1650°F and tempered at 1375°F, after which they were machined into standard 0.505-in. diam tensile specimens.

Longitudinal sections were prepared from the tensile specimens reported in table II for microscopic examination in order to observe the size, distribution and form of the graphitic carbon as well as the character of the matrix.

Figs. 1 and 2 show in the unetched specimen at 100X and the etched specimen at 500X, respectively, an excellent distribution of small graphitic carbon (temper carbon) areas. Fig. 2 shows also a finely spheroidized matrix. Similar structures are shown in figs. 3 through 6.

A specimen for depth-hardness determinations was quenched in oil from 1650°F and tempered at 1375°F for 5 hr after which it was nitrided for 48 hr at 975°F. The results are shown in fig. 7. The nitriding characteristics are very satisfactory.

Subsequent to the investigations reported above, a large heat of 22 tons was made by the acid openhearth process. This heat was rolled into sizes varying from ½ to 4 in. in diam. The composition of the heat was as follows: 1.26 C, 0.49 Mn, 0.028 P, 0.024 S, 1.14 Si, 1.11 Al, 0.29 Cr, 0.22 Mo.

The thermal critical points as determined dilatometrically at heating and cooling rates of 400°F per hr were as follows: Ac_1—1450°F, Ac_3—1480°F, Ar_3—1375°F, Ar_1—1340°F.

Tables III and IV give the composition and mechanical properties of specimens prepared from bars of this heat.

The author acknowledges his indebtedness to Bethlehem Steel Co. for the data, covering the large heat, given in tables III and IV.

The results given show that the carbon is entirely in the combined state in the as-rolled condition and that the graphitizing treatment of oil quenching from 1650°F followed by tempering at 1375°F gives uniform results for the various sizes, as shown in table IV.

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TABLE IV

Influence of Mass on Carbon Distribution and Physical Properties of a 22-Ton Openhearth Heat of Graphitic Nitralloy

Diam. of Bar, In.	Total Carbon	Graphitic Carbon	Comb. Carbon	Yield Point, Psi	Tensile Strength, Psi	Elong. in 2 in., Pct	Reduction of Area, Pct
½	1.18	0.68	0.50	68,000	98,000	21	37
3	1.27	0.72	0.55	68,500	97,000	20	31.5
4	1.28	0.77	0.51	69,000	99,500	22	37

FIG. 5—Photomicrograph of the longitudinal section of sample No. 3, table II. Total carbon—1.31 pct; graphitic carbon—0.84 pct. Nital etch. 100X.

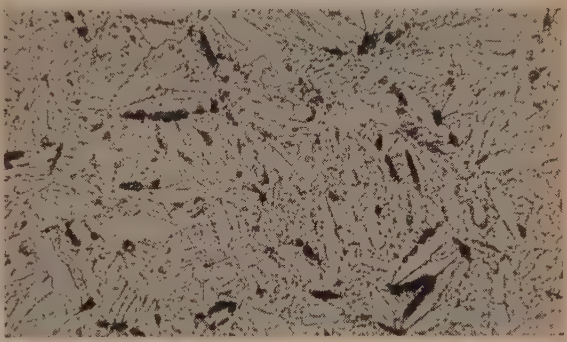

FIG. 6—Same as fig. 5 except that magnification is 500X.

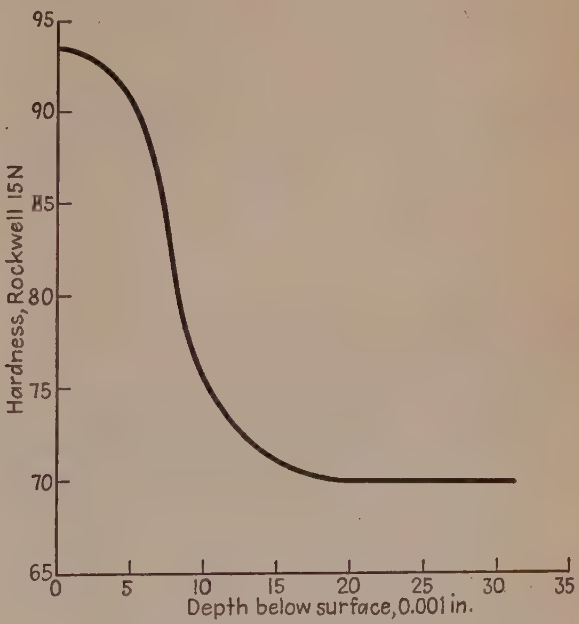

FIG. 7—Hardness v. depth below surface of sample No. 1, table II. Heat treated at 1650°F for 1 hr, oil quenched, 1375°F for 5 hr, nitrided 48 hr at 975°F.

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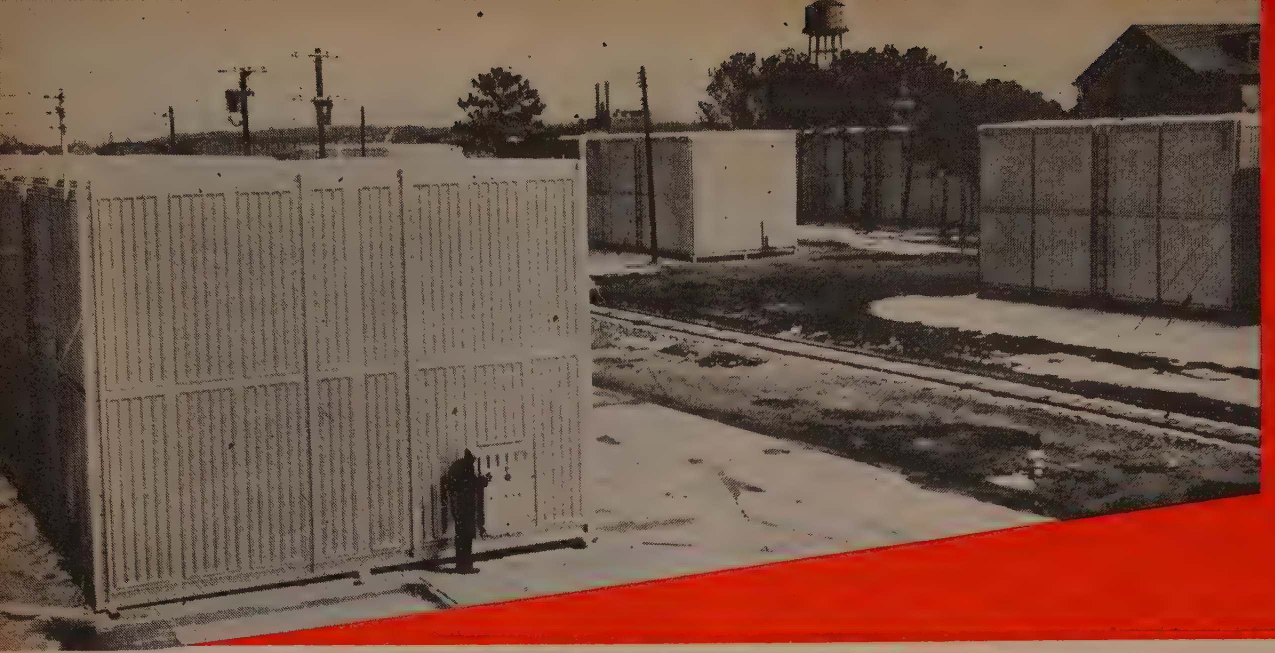

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Welding Aircraft

MASS production tools and techniques are used by the Goodyear Aircraft Corp., Akron, for making giant steel containers shown in fig. 1 to store Navy airplanes in a fly-away condition. In the large plant, where during the war were made the planes now to be stored, top, bottom, side and end sections of storage containers are being fabricated. The sections are shipped flat to storage sites where they are erected into units 19 x 140 ft or 24 x 130 ft. By using straight-line production methods, an average output of 2½ containers per day has been maintained. Three railroad flat cars are required to transport one complete container or can.

The various container sections are made by welding special corrugated sheet steel panels to frames of angles and channels. To assure an airtight, moisture-proof container, all welds joining the panels are continuous, made with Lincolnweld automatic heads manufactured by the Lincoln Electric Co., Cleveland. Each section requires over 100 ft of machine welding, and to provide for a continuous flow of sections through this welding operation, seven welding stations have been set up. Each station is arranged so that while the automatic head is welding one section, another section is being put into a fixture. Welding continues uninterruptedly. The seven stations turn out over 3 miles of welds per day.

Traveling gantries for mounting the welding heads as well as all other jigs and fixtures were designed and made by the Goodyear Aircraft Corp.

The overall layout of the operations is seen in fig. 2, which shows four of the seven automatic welding stations. The finished panels are seen in the left foreground ready for painting while the frame assembly operations are going on in the background. The monorail overhead cranes move the work in a continuous flow through the various stations.

All parts are degreased in lift racks and taken in those racks directly to the welding stations. The first welding stations are the frame assembly fixture. Shown in fig. 3 is a side section frame made of two 3 x 5 in. channels for the longitudinal sides, two 3 x 4 in. angles for the ends, one center transverse Z bar, and four longitudinal Z bars.

All members are first tack welded, three or four operators working at one time on the frame. After tacking, it is finished welded, all joints being welded in the flat or vertical down position. The frame is then turned over for welding on the opposite side. All facing surfaces are ground flush and the frame is then hoisted and placed in one of the gantry fixtures for welding on the corrugated metal skin.

The sheet metal panels are 8 2/3 x 3 1/6 ft and made of 14-gage, pickled and oiled, cold-rolled steel. The special corrugation is pressed in by

High-speed production was the primary interest in laying out the welding and assembly line at Goodyear Aircraft Corp., Akron, for building air-tight containers for storing Navy aircraft in fly-away condition. Automatic welding heads, gantry-mounted, weld skins to frames at a speed of about 8 fpm, completing 2½ containers a day. The welding methods are described in this article.

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Lincoln Electric Co., Cleveland

Storage Containers . . .

the Youngstown Steel Door Co., Youngstown, where the panels were first developed for box car doors. As with the angles and channels, the panels are first degreased in racks and carried to the welding stations in the racks.

The butt lines for locating the position of the sheet metal panels on the frame are marked on the frame with chalk lines. A chalked string is stretched between fixed locators on the sides of the jig.

The skins are placed matching the lines and tack welded. Continuous welds are then made

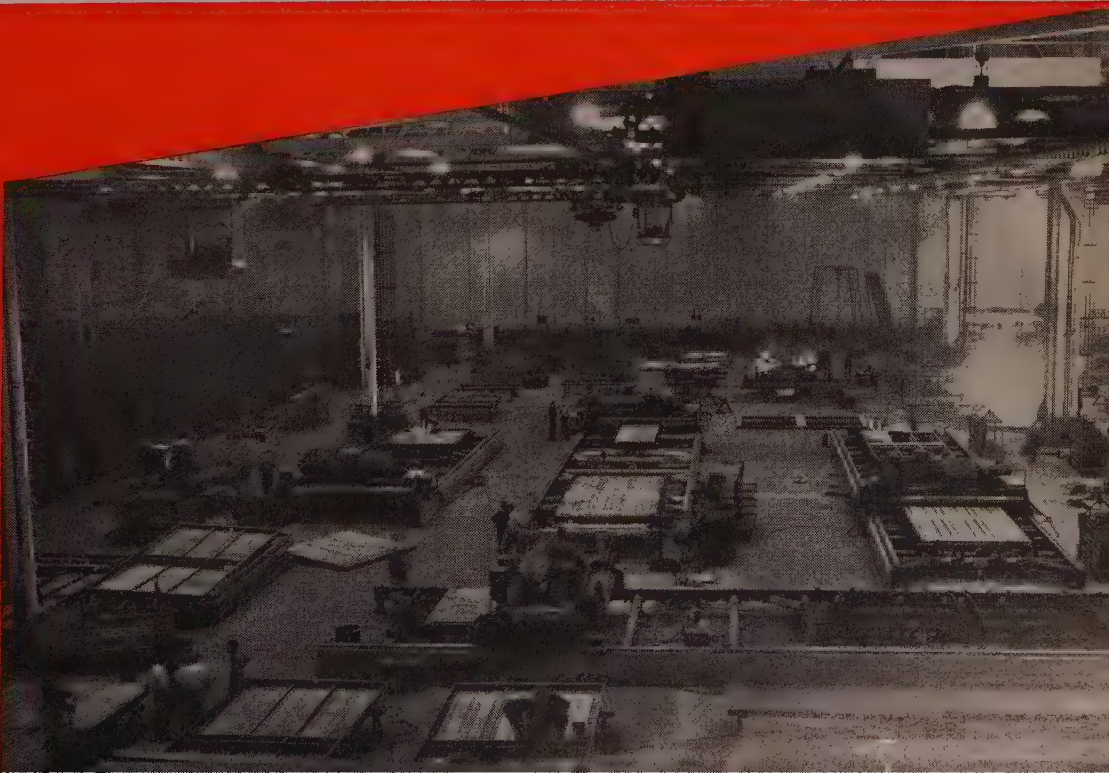
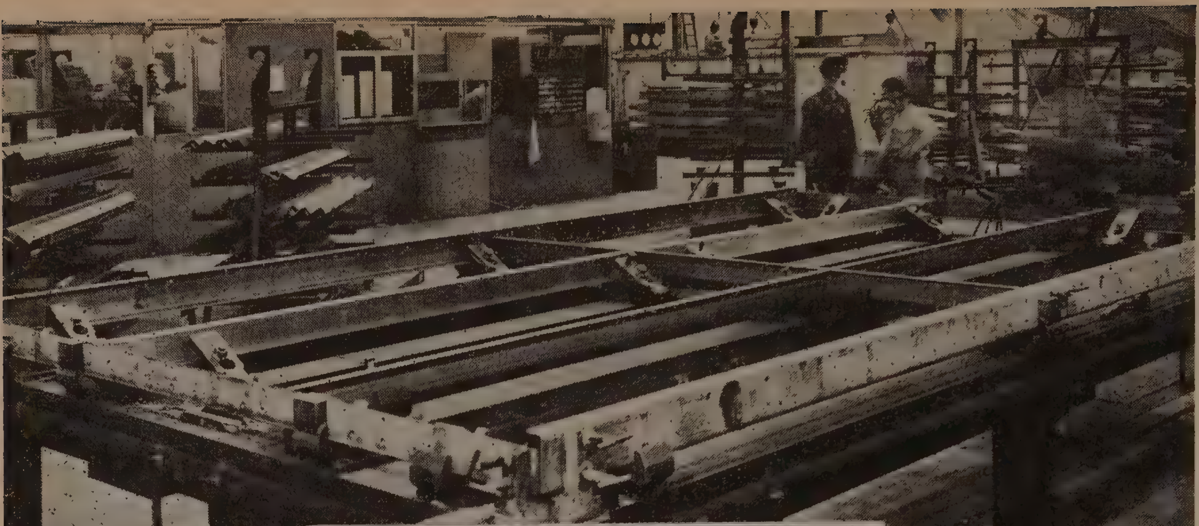
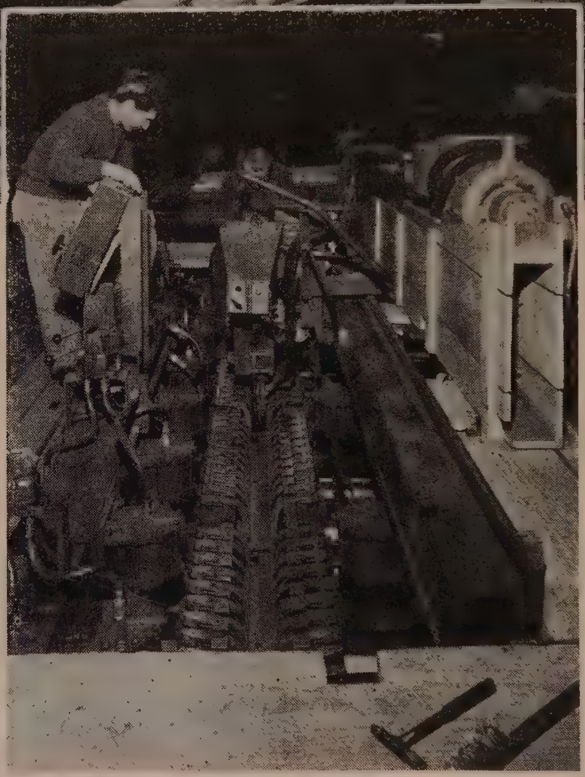


FIG. 2—The gantry-mounted welding head in the foreground is welding a side section, while the fixture between the tracks to the right is being readied for another section. Four of the seven automatic welding stations are shown.



ABOVE

FIG. 3—Frames, consisting of angles, channels and Z's, are first tack welded. Finish welding is done by hand in the flat position, then the frame is overturned for welding on the opposite side. This is a side section.



LEFT

FIG. 4 — In making a transverse weld, across corrugations of the container skin, the skin is clamped by air-operated arms. The welding head is mounted on a carriage on the gantry so that the head is driven on a beam by its own carriage motor while the gantry is stationary.

with the gantry-mounted automatic welding head, each weld requiring positioning of the gantry. Air-actuated clamps pushing against the 5-ton weight of the gantry hold the skin down during the welding. In making the longitudinal welds, during which time the gantry moves the length of the section, roller clamps ride along the seam. In making the transverse welds, the skin is clamped by a series of air-operated arms as shown in fig. 4. The welding head is mounted on a carriage on the gantry so that when the gantry is stationary for the transverse welds, the head is driven on a beam by its own carriage motor. The controls are interlocked so that the carriage can only move when the clamping arms are down. The carriage remains stationary on its beam when the gantry is moved in making the longitudinal welds.

All controls for the complete operation of the gantry and welding head are mounted on a central panel on the bridge of the gantry. The vacuum units for picking up and reclaiming flux are mounted on the gantry, as are the 600 amp welders. The dc circuit controls of the automatic welding head simplify the relaying of this centralized control panel and permit relatively inexperienced operators to easily position the head over the seam and adjust the electrode up or down to start the arc. This automatic welding head does not require any additional fusing material to aid in starting the arc.

A welded side section is shown in fig. 5. Seven machine welds are made on this section, three of which are transverse welds—one on each end and one in the middle. Four of the welds are longitudinal, two along the sides and two down the middle. All welds around the outside of the panels are made ⅜ in. from the edge of the sheet metal with the welding-through technique. Welds are made with currents from 525 to 560 amp with a ⅛-in. diam electrode. The high current densities concentrate sufficient heat to weld

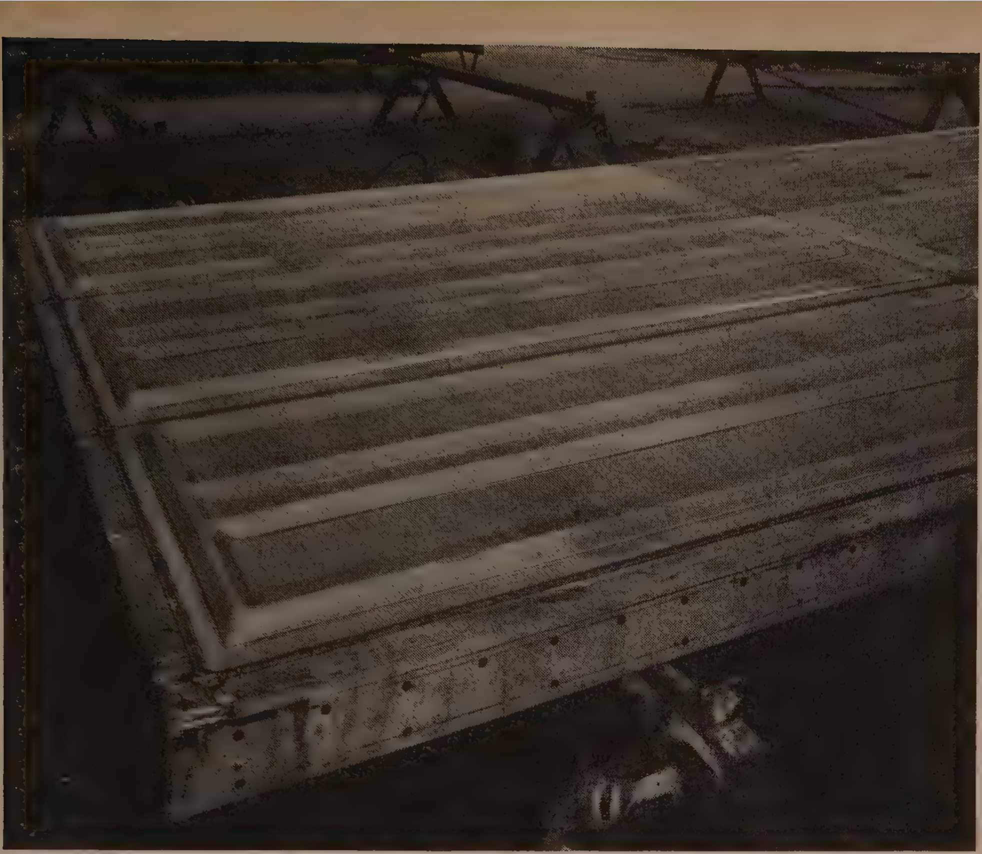


FIG. 5 — The finished side panel is shown here, inspected and ready for painting. Automatic welding produces the finished containers at the rate of 2½ a day.

through the sheet metal, fusing it directly with the channel member beneath. Speeds of travel are from 88 to 96 ipm. All welds are made against a copper chill strip mounted on top of the supporting members of the jig. The two inside longitudinal welds and the one transverse weld are made over the plain butt joint between panels, and the weld both joins the panels and fuses them to the Z-bar members beneath.

Distortion is controlled and the sections are finished straight within 1/32 in. The uniform application and high concentration of the welding heat, plus the fast travel speeds, eliminate much of the distortion. Firm clamping in the fixture further contributes to this control, plus the following of a balanced sequence in making the welds. All welds are made away from the ground.

The first weld made is a transverse weld on one end of the section, moving from left to right on the gantry. The head is then positioned to make the outside longitudinal weld. This brings the gantry to the opposite end of the section where the other end transverse weld is made, running the head on the beam from right to left.

The gantry is then run down without making the weld along the left-hand inside seam to check the alignment of the butt joint of the panels. The two inside butt seams are then welded; then the middle transverse joint, and finally the left-hand outside longitudinal through-weld. This sequence effectively controls shrinkage during the welding. The final operations are 100 pct inspection of all welding and painting.

This production of storage containers is being speeded to a conclusion at the rate of 2½ units per day to provide the Navy with containers to store 2000 aircraft of all types. Planes will be stored at six Navy bases throughout the country.

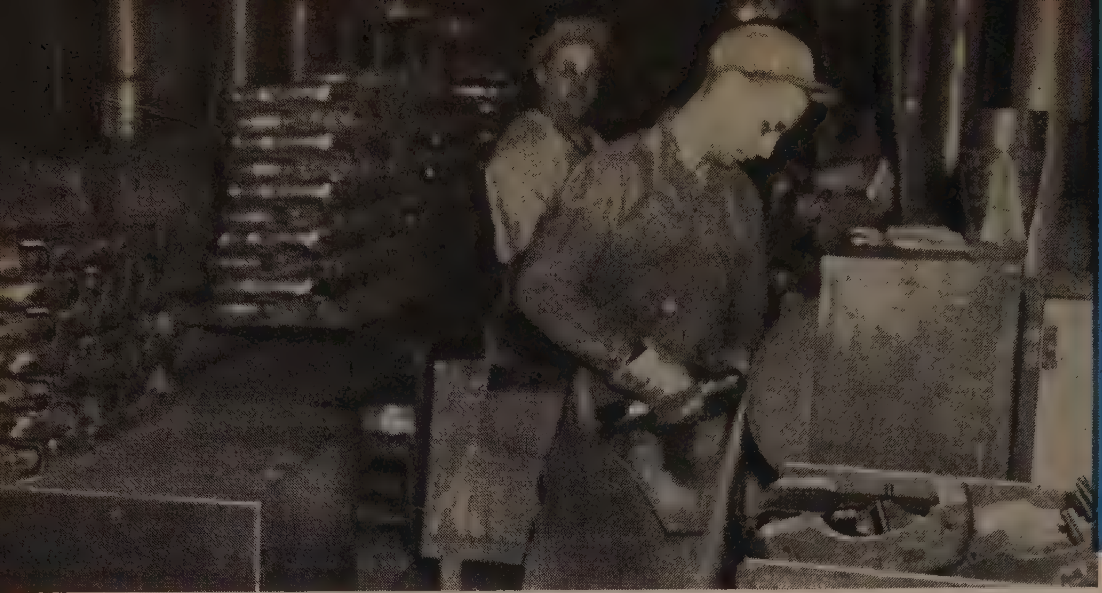
German Oxygen Generating Plants

A NUMBER of the different oxygen generating systems used in German industry are described in a report now available from the Office of Technical Services, Dept. of Commerce, Washington.

Equipment of the Messer Co., chief German manufacturer of plants of other than Linde-Frankl design is discussed, and information on the Heylandt Process, the Kapitza (Russian) process, operation at low pressures only, the acetylene hazard in the various systems and physical constants of the gasses is given. The successful use of silica gel adsorbers in removing acetylene and other hydrocarbons is described.

According to the report, the experience of German users of oxygen in quantity indicated that, while the production of oxygen in purities up to 99 pct requires rapidly increasing amounts of energy, manufacture in concentrations of less than 95 pct was not economical.

The report, PB-88840, contains 124 p. and costs $3.25. Orders should be accompanied by check or money order payable to the Treasurer of the United States.



○ ○ ○

FIG. 1—Grinding bumper guard ends with a coarse grit belt running at 1750 rpm is the first step in preparing the parts for plating.

○ ○ ○

Mass Production Techniques

○ ○ ○

Rapid, systematized operations for polishing and plating steel auto parts at the Brown-Lipe-Chapin Div., General Motors Corp., are described in this article. Procedures in the automatic cleaning and plating lines are discussed.

○ ○ ○

POLISHING and electroplating operations at the Syracuse plant of Brown-Lipe-Chapin Div., General Motors Corp., have been geared for large quantity production of bumper guards and other steel parts for General Motors cars and trucks

Nearly all the parts processed are for severe exterior exposure and must meet decorative plating specifications as well as functional needs.

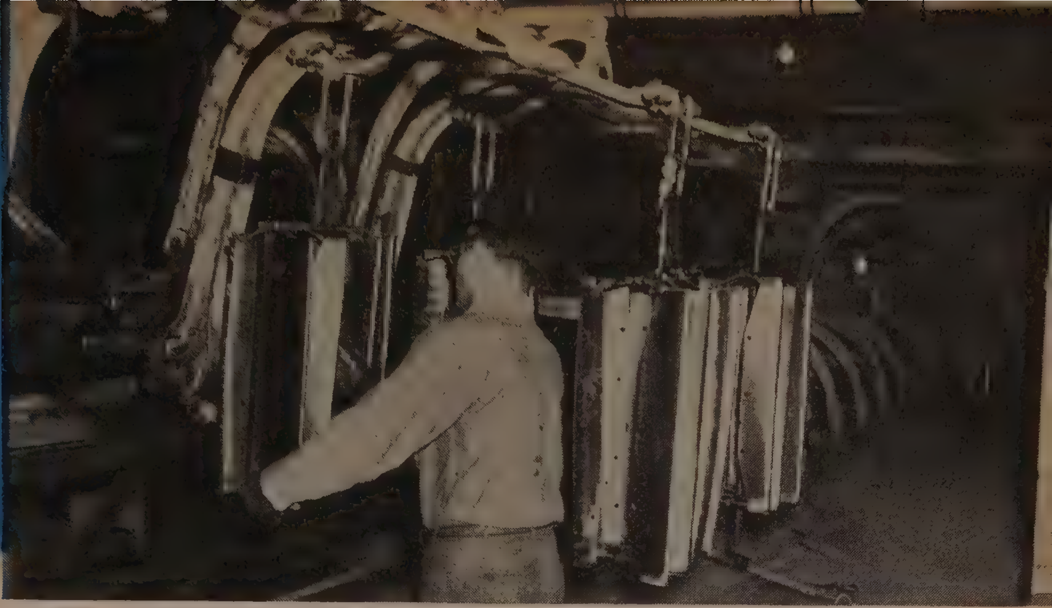
Parts are initially formed from cold-rolled steel and generally require considerable polishing to remove draw marks and other irregularities before delivery to the plating department. For example, bumper guards must first have ends ground on a coarse grit belt, running over a 16-in. diam scrap buff at 1750 rpm, as in fig. 1. And then must be polished on a cement-headed, fine grit wheel and given a final polish on a fine grit, glued wheel with grease stick application.

All or nearly all surfaces of parts are ground or polished before the parts are delivered to plating departments.

No buffing is done until after the first coat of copper has been applied, as buffing is more rapidly and more easily done on the copper and causes the metal to flow and fill or mask scratches left by polishing wheels.

Initial copper plating is done on a Stevens plating machine, part of which is shown in fig. 2, using Butanol-coated racks making about 1.1 cycles per hr through the machine. The process

FIG. 2 — Racked steel parts about to enter the cleaning tanks of the Stevens machine used for the primary copper plating.



in Plating Steel Auto Parts

begins with dip cleaning in an alkaline solution at 170°F, followed by reverse electrolytic cleaning in an alkaline solution at 212°F.

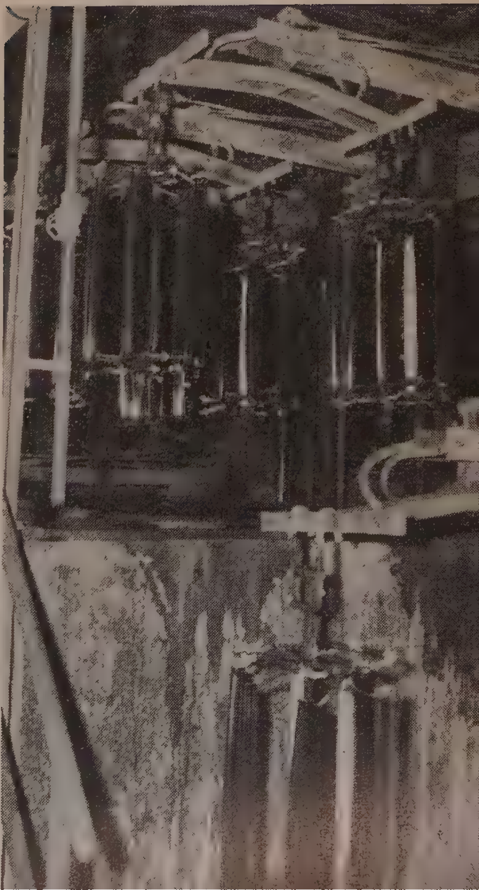
Parts then proceed to a cold spray rinse, an etch in dilute sulfuric acid at room temperature and another cold spray rinse. The next step is a cyanide copper strike to prepare the parts for bright copper plating. In the bright plate bath, an average of 0.0008 to 0.0009 in. of copper is applied in 23 min, using a current density of about 30 amps per sq ft.

This plating is followed by two cold spray rinses after which racks are removed from the Stevens machine and are hung on a chain conveyer that takes them to an unracking station for subsequent buffing. Some parts are hand buffed, but Chevrolet parts, handled in largest quantities, are buffed on a straight line machine in which parts are placed in fixtures for advancing by chain under a series of ten wheels. Some of the wheels are fed with a fine spray of liquid compound. Stick compound, fed automatically, is applied to the other wheels. Hand buffing on areas that the conveyer line wheels do not reach is necessary on some parts.

After buffing, parts are fixed to a different set of racks for additional copper and nickel plating. Threaded portions of the parts are covered with short lengths of rubber tubing to prevent plating of the threads.

An additional coating of bright copper, partly

FIG. 3—Steel parts that have been copper and nickel plated emerging from final rinse before chrome plating.



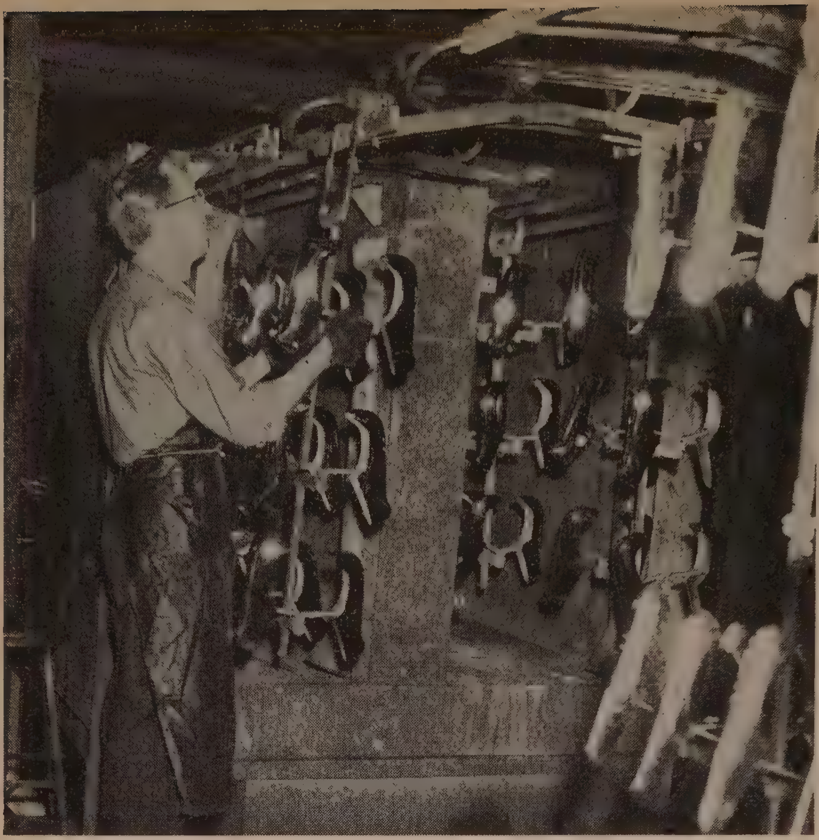


FIG. 4—Racks of bumper guards emerging from the drying oven at the end of the plating line.

to replace the copper buffed off, is applied prior to nickel plating. This operation is done on a Hanson-Van Winkle-Munning machine which also does the nickel and chrome plating. The schedule through the machine is as follows:

(1) Dip clean in alkaline solution at 180° to 200°F. (2) Dip clean in a second alkaline solution. (3) Electroclean in an alkaline solution at 200°F. (4) Cold spray rinse. (5) Electroclean as in step (3). (6) Rinse. (7) Etch for one min in a weak sulfuric acid solution at room temperature. (8) Rinse. (9) Copper strike in cyanide solution at 120°F. (10) Bright plate 0.0004 in. of copper for a total average copper thickness of about 0.001 in. (11) Dip rinse and cold spray rinse. (12) Electroclean in an alkaline solution at 150°F using case-hardened steel anodes. (13) Cold rinse. (14) Dip in weak sulfuric acid solution at room temperature.

(15) Bright nickel plate in a proprietary solution containing nickel chloride, nickel sulfate, boric acid, a brightener, and both wetting and antipitting agents. Bath pH is held at 3.5 to 4.0, and temperature is maintained at 130°F. This plating is done with bagged anodes in a rubber-lined tank and continues for 20 min to give an average of 0.0006 to 0.0008 in. of nickel. Current density ranges from 20 to 45 amps per sq ft. Arms, supporting the racks are agitated, and the solution is continuously circulated and filtered. (16) Dip rinse in reclaim tank. (17) Dip rinse two more times, after which parts enter the chrome plating line. (18) Cold spray rinse. Fig. 3 shows racks at final rinse before chrome plating.

(19) Chrome plate in standard solution at 110°F using sawtooth lead anodes. Voltage is adjusted to suit the rack loads in the tank, with current density varying from 250 to 350 amps per sq ft. (20) Dip in reclaim tank in which water is violently agitated. (21) Cold dip rinse in agitated tank equipped with spray. (22) Cold dip rinse, air agitation. (23) Hot spray rinse. (24) Advance through a drying oven heated with steam coils and with forced air circulation. Fig. 4 shows racks of parts emerging from the dryer and being unloaded onto a chain conveyer to be carried to an unracking station. Racks are stripped before being reloaded for the next circuit.

Inspection of the plated parts for defects and lack of coverage is done at the unracking stations. Any parts that show burns are buffed on those areas, but no other buffing is required.

Ceramic Coatings Protect High Temperature Metals

BECAUSE requirements of stress and temperature for performance beyond the potenialities of currently used high temperature alloys, the National Bureau of Standards under the sponsorship of the National Advisory Committee for Aeronautics have undertaken investigations toward the development of ceramic coating for metals with high melting points. The work has been directed toward the prevention of oxidation at high operating temperatures. Preliminary results indicate that molybdenum with specially designed ceramic coatings is promising.

The coatings are applied in the form of water suspensions or "slips" to cleaned specimens by either dipping or spraying. After drying, the pieces are fired at 2150°F in oxygen-free atmosphere.

One of the better coatings, M-13-33, consisted of a base coat of low expansion frit with 20 pct zirconia added, a cover coat of 95 pct zirconia and a seal coat of a thin application of the base.

The best of the coatings retarded oxidation of the molybdenum. In air at 1650°F, unprotected molybdenum sheet decreased 0.02 in. in thickness in ½ hr, but there was no decrease for the ceramic coated molybdenum heated for 70 hr under the same conditions.

Hot Forming Magnesium Sheet

By E. F. STONER,
and
CROSBY HARDEN

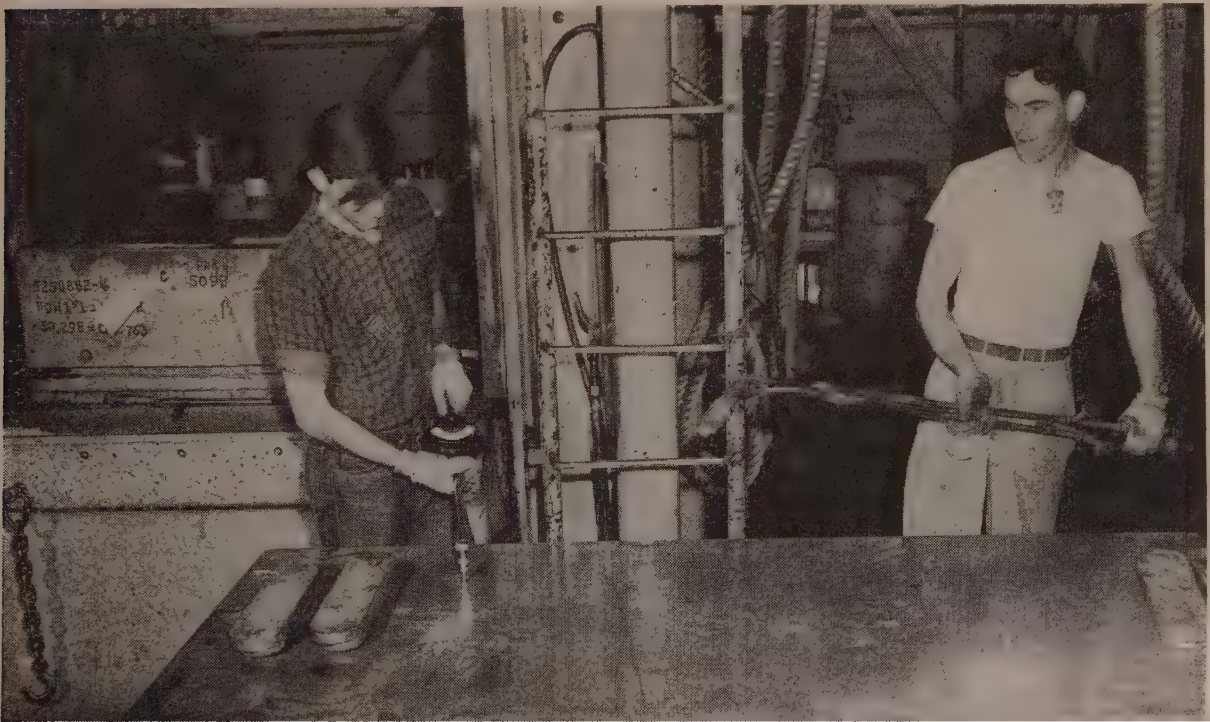
Structural Research Engineer, Engineering Div., and Asst. Foreman, Sheet Metal Dept., respectively, Douglas Aircraft Co., Inc., El Segundo, Calif.

Results of investigations of various methods of hot forming magnesium sheets, with particular emphasis on forming limitations, methods of heating and heat ranges are discussed in this article. Chief conclusion reported is that hot drop hammer and stretch press forming offer distinct production advantages.

THE lack of information on the service performance of magnesium alloys under all conditions of aircraft operation is a limiting factor in their consideration. For this reason, it appears that the initial use of magnesium alloys could be for a few non-critical, replaceable parts to gain design, production and service experience. If this experience is favorable, their use could be gradually increased where justified.

Magnesium has been used to a limited extent in planes built at the El Segundo plant of Douglas Aircraft Co. The most interesting applications were the fuselages of the Navy-Douglas Skystreak and its sister ship, the Skyrocket. Here the use of a relatively thick magnesium skin eliminated the need for longitudinal stiffeners, and the transverse frames were widely spaced and of relatively small depth since they did not need to allow for passage of the longitudinal stringers. This smaller depth in turn permitted a smaller outside diameter for the fuselage, an important aerodynamic advantage. The relative simplicity of the fuselage structure also made it easier to assemble. Magnesium has also been used as a space-saver in the wheel compartments in thin wings. The usual skin-stiffener wing covering over the wheel wells is replaced by a thick unstiffened sheet of magnesium alloy, gaining space for retracting the wheels out of the air

FIG. 1—This heating plate setup shows the heating method and pyrometer used for temperature readings.



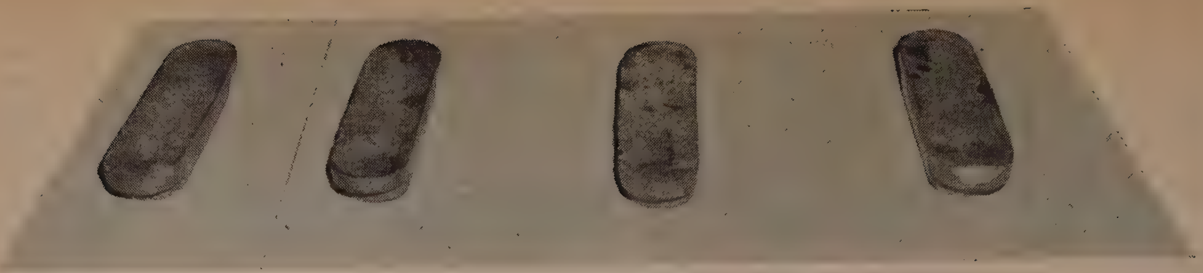


FIG. 2—Asbestos held in place by lead pigs, is used to cover the heating plate and sheet.

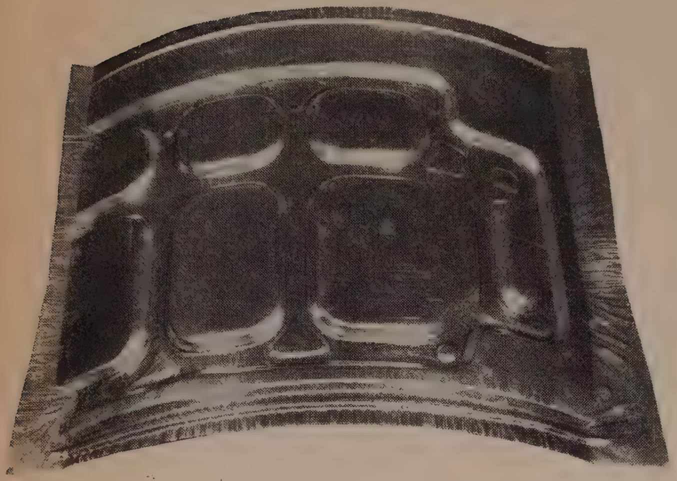


FIG. 3—Typical drop hammer formed part.

stream. Magnesium castings and extrusions are used where the weight saved justifies their use.

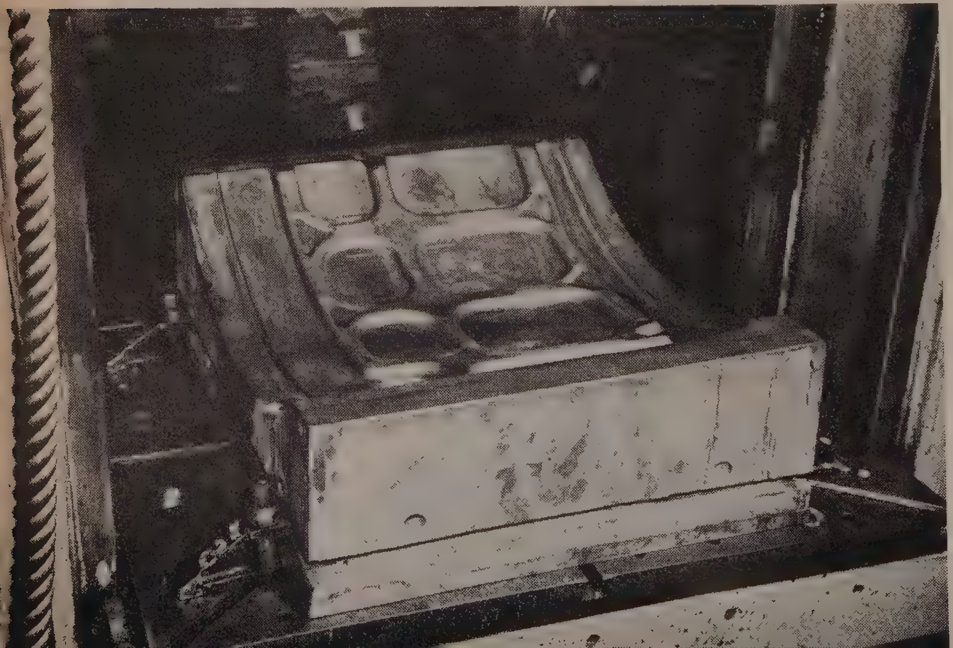
Applications of magnesium alloy sheets will eventually involve drop hammer forming. Since the El Segundo plant had not had previous experience with the hot drop hammer forming of magnesium, tests were conducted to determine the forming limitations, best methods of heating, proper heat ranges, and other factors that would influence design, tooling and production.

Magnesium alloy FS-1 in both the annealed (FS-1a) and the hard rolled (FS-1h) conditions was selected for the tests. FS-1a can be formed at temperatures as high as 650°F without affecting its strength, but FS-1h loses strength when formed at temperatures above 325°F. However, because most material on hand was FS-1h and since interest was primarily in forming limits, tests on both the annealed and hard rolled materials were conducted at temperatures up to 600°F. Gages tested ranged from 0.040 to 0.125 in.

The tests were run with a minimum of expense, thereby precluding the use of special tooling or equipment. The first problem was to provide a suitable method of heating the magnesium sheets quickly and uniformly. The heating was to be done close to the drop hammer so that the sheets could be transferred quickly to the hammer with a minimum heat loss. For this purpose a thick metal slab having a flat, smooth surface was used, and heated with gas-air torches, as shown in fig. 1. Kirksite was tried for the slab, but was found to soften locally at about 475°F. Hence, an aluminum slab was used since temperatures exceeded 650°F. Tempil sticks were first used to measure temperatures but were awkward. A surface pyrometer was obtained and proved highly satisfactory. After the slab had been uniformly heated to the test temperature, the magnesium sheet to be formed was placed on it, then covered with asbestos sheet and weighted with lead pigs to hold it tight against the heating slab, as shown in fig. 2, insuring uniform and rapid heat transfer.

The dies used for the tests were selected from production dies to represent the most severe conditions anticipated in the applications being considered, such as deeply pillowed double curvature inner skins for doors and cowling. A typical part is shown in fig. 3 and the die in place on the hammer in fig. 4. The dies had Kirksite bottoms and lead tops. The die bottoms were heated in place, using gas-air torches, a slow but effective method for experimental work. Dies required an hour or two to reach temperature. This time could have been reduced had

FIG. 4—For testing hot forming of magnesium, the die bottom is in place on the drop hammer.



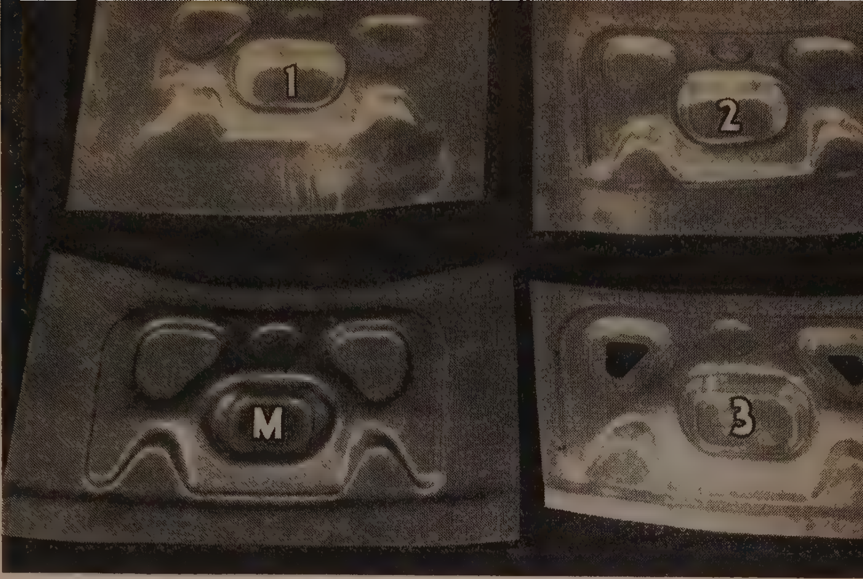


FIG. 5—Aluminum parts are stage-formed on two starter dies, 1 and 2, and completed in finish die, 3. The hot formed magnesium alloy part, M, required finish die only.

some insulation been used between die bottom and press bed. Highest temperature of the Kirksite die bottoms obtainable without excessive local softening was approximately 475°F. To obtain highest possible temperatures of the lead top, a new top was poured prior to the first tests and the top used as soon as it had solidified sufficiently. By the time the test hits were made the maximum die top temperature was less than 300°F. However, it was obvious that die top temperature was not critical for normal impact forming since the time of contact with the sheet during forming would only be a fraction of a second.

Dies were heated to maximum possible temperature in order to try a method of slow forming. The die selected for these tests was the final one of five staging dies required for the forming of the aluminum part shown in fig. 5. It was anticipated that the magnesium part could not be formed completely in one strike, but that it might possibly be formed on the single die by letting the top form the part as far as possible under gravity, followed by an impact hit to complete the form. This method worked in all cases tried. However, it was also found that the part could be formed with one blow if the initial sheet temperature was slightly higher.

Tests were run at various combinations of die and sheet temperatures. It was found that good parts could be impact formed in all the test gages of FS-1a and FS-1h with initial sheet temperature, at the heating plate, ranging from 450°F for the heavier gages of FS-1a to 600°F for the lightest gages of FS-1h, the annealed sheet requiring somewhat lower forming temperatures than cold-rolled sheet in the same gages.

Sheet temperature proved an important variable. Die temperature was not critical as parts were successfully formed at die temperatures as low as 130°F. However, warming the dies reduces heat loss from the sheet during the few seconds it is in contact with the die prior to striking. Heat loss from the sheet during transfer from the heating plate proved small, even in the lighter gages. Springback was very small. Wrinkles formed in the light gages, and it was found necessary to heat the sheet for planishing, as even the annealed material was too hard to hand-work readily.

The excellent hot formability of magnesium exhibited on the drop hammer tests encouraged a series of tests of severe stretch press forming. Dies were on hand that had been made for an unsuccessful attempt to form bomb rack fairing nose and tail sections, each in one piece of aluminum alloy, to avoid the current practice of making them of two pieces welded together.

FIG. 6—This all-magnesium bomb rack fairing assembly is 25 pct lighter than a similar aluminum assembly. Parts D, B, and C were formed on a stretch press; bulkheads E were formed in a punch press; bulkheads F were formed in a drop hammer, parts E and J were formed in a Hydropress; and parts K, I and H were formed in a press brake.

B
E
E
F
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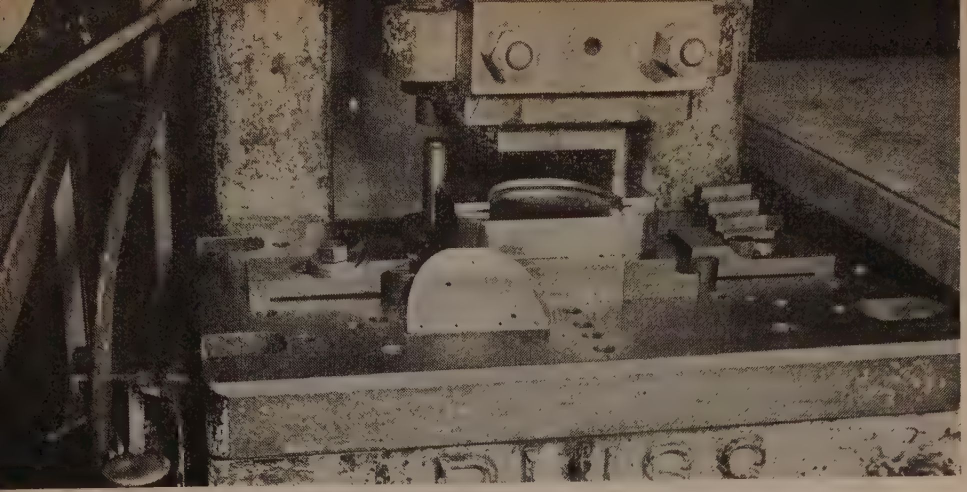


FIG. 7—This is a typical punch press forming die and a hot formed magnesium part.

The die was mounted on the press with asbestos between it and the loading bar to minimize heat transfer. The die was heated with gas-air torches and the sheet was heated on a hot plate as for the drop hammer tests. However, heating the sheets was found to be a waste of time, as the time required to place the sheet in the machine grips and perform the stretching operation was so great that the sheet cooled except where it was in contact with the die.

Sheet used for the stretch tests was 0.051 in. FS-1a and 0.040 in. FS-1h, annealed for a half hour at 600°F. Ruled on one side of each test sheet to provide a means of visualizing the stretch distribution were 1 in. squares. The dies were lubricated with Ultra Vis No. 32, a clean lubricant which maintained sufficient lubricating properties at the maximum temperatures used. Tests were run with the dies at temperatures ranging from 300°F to 600°F. Best forming temperatures were found to be about 325°F to 350°F.

Distribution of the stretching was found to be the most important and difficult factor to control. The stretching naturally tended to take place where the sheet was hottest, which occurred in the bulge area in contact with the die, and little or no stretch occurred in the sheet skirts, the portion between the grips and line of contact with the die. An attempt to relieve this situation by cutouts at the middle of each skirt helped considerably, but required care in determining correct proportions to prevent wrinkling or tearing. A different approach was then tried, that of heating the skirts. Gas-air torches were first used, but sheet temperature was too difficult to control. Banks of infrared lights were tried next, but sufficient capacity could not be obtained to reach and maintain the required temperatures. Finally, the die was recast, adding a longer skirt, to provide contact with and consequent heating of the sheet in the skirt areas. This proved quite successful and stretching was fairly uniformly distributed, permitting successful forming of the most difficult parts tried. In addition to the advantage of one piece fabrication, the shape conformed exactly to the die, resulting in an aerodynamically better part than was possible with the welded assembly.

To round out the test program, all parts for the complete bomb rack fairing, shown in fig. 6, were fabricated and assembled. This involved drop hammer, stretch press, punch press, brake, hydro press, and dimpling operations, and served to give all departments involved an opportunity to get acquainted with magnesium fabrication.

A typical punch-press die setup and magnesium part is shown in fig. 7. The dies were used cold and the sheet heated to 450°F. FS-1h sheet was used (not annealed) and formed satisfactorily.

Hydropress forming, being a relatively slow operation, required a hot form block, but no preheating of the sheet. The form block was heated off the press, then put in place on an insulating sheet to prevent rapid heat loss to the press bed. The form block and magnesium blank were covered with a rubber pad to protect the large rubber blanket in the hydropress ram. For production, special heat resistant rubber compounds are available. Parts formed satisfactorily.

Brake forming was accomplished by simply torch heating the dies and preheating the sheet.

In assembling the fairing, dimpling was necessary. It was done with the same electrically heated dimpling dies used for aluminum 75-ST. A slow, continuous application of pressure was found best, with the die heat adjusted to give a dimpling temperature between 200°F and 350°F, depending on gage.

As far as the limited range of the tests permit conclusions to be drawn, it is believed that with adequate heating equipment it is possible to form parts of magnesium alloy that can be formed of the usual aluminum alloys. However, at present it is felt that of the methods tested only drop hammer and stretch press forming will offer any distinct production advantages. The elimination of staging with the former, and the possible reduction of parts and joining operations, such as welding, with the latter may in some cases result in production savings and better parts. Costs for the other operations are expected to be higher because there appear to be no forming advantages to offset the additional heating operation and tooling charges.

The results obtained from the use of the crude heating plate test setup have served as a useful guide in designing a portable production plate type heating oven in which the sheet will be clamped between two heated platens. A portable oven for heating formed parts is also being planned to heat parts requiring additional forming or hand work.

The forming tests did not cover the complete range of problems that would be representative of full scale production with magnesium. However, they have indicated some of the factors to be considered in planning to fabricate magnesium alloys.

New Heating Furnaces Boost Forging Output

By HERBERT CHASE
New York

Introduction of new rotary hearth furnaces with full automatic controls has increased uniformity of forgings, increased capacity, and conserves both space and fuel at Transue & Williams. The use of these rotary furnaces and various forging jobs are described in this article.

IN the constant effort to produce superior forgings with high economy, Transue and Williams Steel Forging Corp., Alliance, Ohio, has added a laboratory for control and research on steel and has installed new rotary hearth furnaces. Counted among the advantages of these furnaces, which were all built by the George J. Hagan Co., Pittsburgh, are a much higher degree of uniformity in billet heating, plus economies in space required and in oil consumed. Average savings in oil, as compared with previous furnaces used, amounts to about 3 gal per ton of billets heated. A part of this saving is in reduced radiation losses.

Besides these economies, there is the convenience of having the billets delivered always at the same point at a uniform rate. This helps to shorten handling time. Also significant is the avoidance of the hazard of overheating steel. Precise thermostatic control of firing prevent overheating even though die changes or other delays may interfere with the regular discharge of billets as they reach the unloading station.

At the start of a given run, furnace controls are set by the shop metallurgist to suit the type and size of billets required and furnacemen are

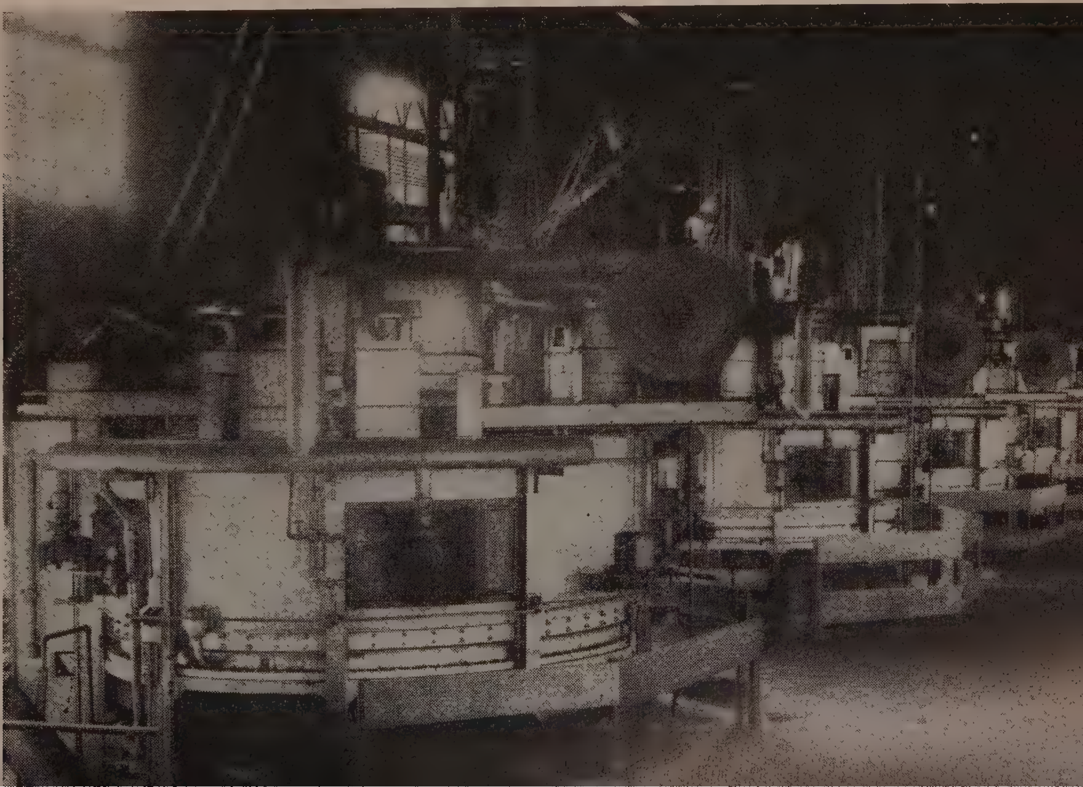


FIG. 1—A battery of five Hagan rotary hearth furnaces, installed at the Transue & Williams Forging Corp., Alliance, Ohio, has resulted in major operating economies.

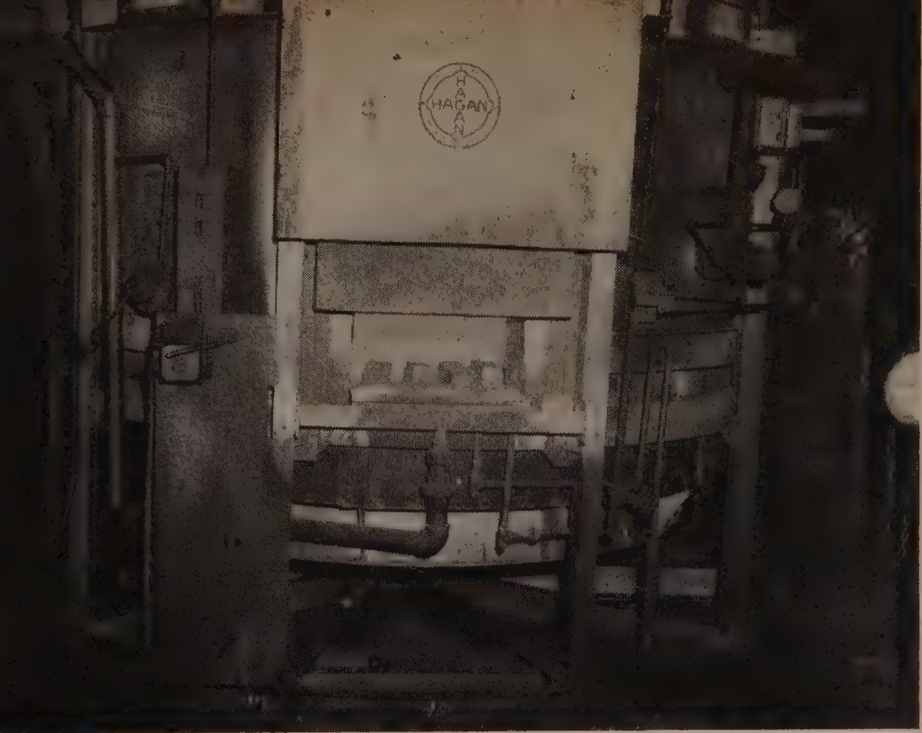


FIG. 2—Through the charging door of one of the new furnaces can be seen a part of the rotary hearth. One of the burners for using oil fuel is shown at right.

not permitted to change these control settings. If troubles arise, the metallurgist in charge must determine their cause and see that the steps necessary for their correction are taken promptly. This trained supervision, in combination with precise and properly set automatic furnace controls, is counted upon in large measure to insure uniform quality of the forgings.

Fig. 1 shows a battery of five of the new furnaces and fig. 2 shows a portion of the circular hearth through the loading and unloading door. Although the new rotary hearth furnaces replace either two or three of the type formerly used, the time that billets remain in the furnaces averages 25 to 30 pct longer. This makes it possible to operate at a lower thermal head and accounts in part for the higher fuel economy and for preventing waste through overheating of steel.

Flames from burners are directed tangentially and horizontally about 18 in. above the hearth. Although the furnaces are not designed for controlled atmosphere in the usual sense of this term, burners are adjusted to maintain a slightly reducing atmosphere and thereby tend to reduce scale formation. Thermocouples are placed nearly opposite the discharge door about 24 in. above the hearths.

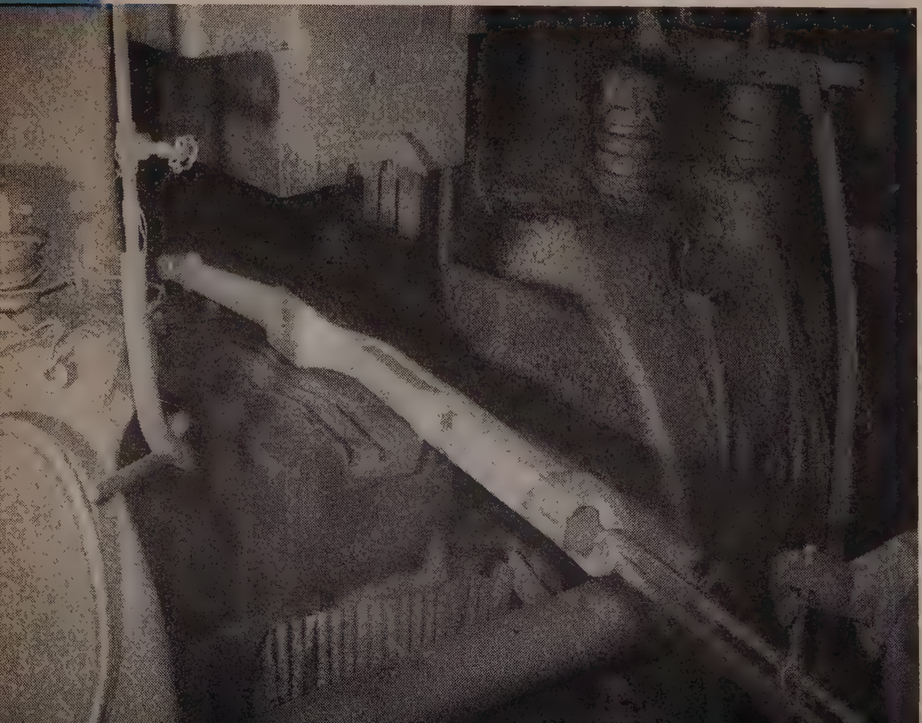
All hearths are 9 ft diam, except in one furnace having a 7 ft hearth. Such hearths afford large area despite the moderate size of the furnaces and their economy in floor space. If short billets are required, two rows, with pairs of billets set radially end to end, can be handled.

Although furnaces were designed originally to have one of the flues at the center in the belief that this was necessary to insure uniform heating, experience has shown that this flue can be eliminated, thus increasing useful hearth space, as the central flue required space for a central support no longer needed. Hearth speed is kept constant and fuel supply is varied in proportion to the tonnage rate at which billets are charged.

With the rotary furnaces, one man charges cold billets and removes those heated to forging temperature. As one furnace displaces two or three of the box type, each of which needed one furnaceman, there is a considerable saving in labor. Some consideration was given to the use of induction heating rather than heating in oil fired furnaces, but the latter are regarded as more adaptable to the constantly changing requirements of a job shop in which a variety of forgings in different types of steel must be handled.

Not all box type furnaces have been eliminated, partly because the box type is better adapted for some types of work and its average economy is being improved by the installation of automatic controls. These are designed to reduce or pre-

FIG. 3—One end of a truck axle forging and the finish forging die are shown here. After reheating, the end shown here in the tongs is forged similarly to complete the axle. Flash is trimmed in this die.



vent billet overheating.

Fuel economy is also bettered in part by equipping box type furnaces with doors that are adjusted to provide the minimum opening for billets of a given size.

Box type furnaces are used for most large forgings including those that require reheating, partly because this type is considered better adapted to this class of work and to the forging cycle required on certain large parts.

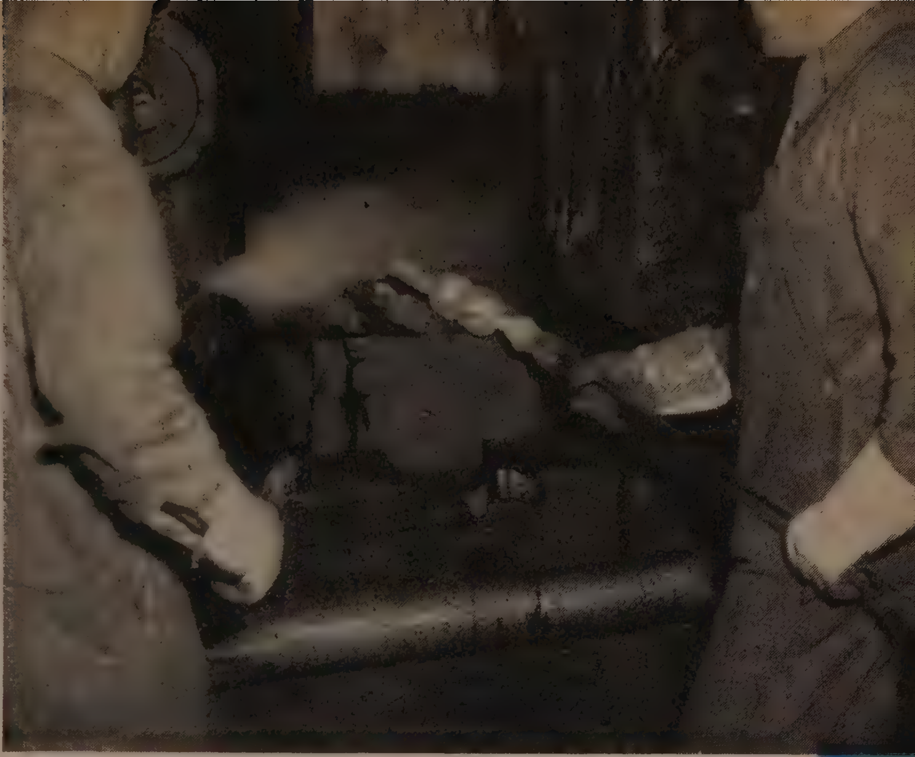


FIG. 4—Type 316 stainless steel valve forgings weighing about 12 lb are produced in a 4000-lb steam hammer and a three impression die at the rate of about 40 an hr.

Typical of such work is the forging of heavy front axles of H-shaped sections except at the ends where yokes are forged. In work of this type the hammer and furnace setup is such that the heavy billets and forgings are handled around a trolley-tong loop for convenient shifting from furnaces to hammers. In one forging operation, an axle weighing 182 lb is completely formed in just two forging sequences.

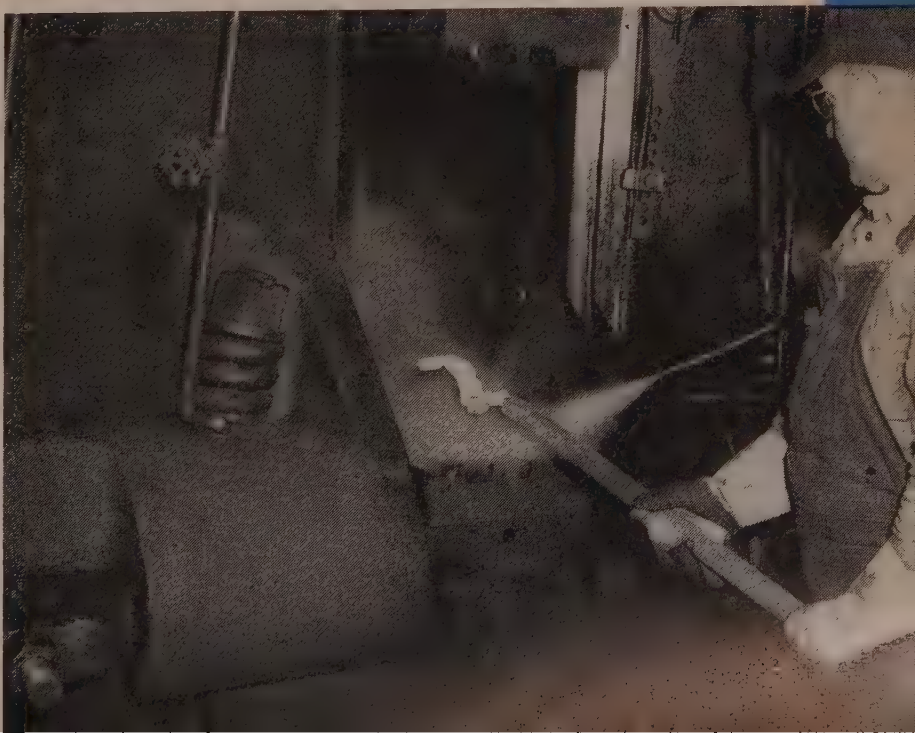
One end of the square-section, rounded-corner billet, 1045 steel, is heated to 2225°-2250°F in a box type furnace and then is clocked in an 8000-lb steam hammer using a die in which the billet is put through rolling, breaking and blocking impressions in the first heat. After reheating in a second box type furnace, this same end is finish forged in a single-cavity die, shown in fig. 3, in a 10,000-lb steam hammer. Flash is trimmed immediately and the forging is restruck in the finish forging die to straighten it.

The second end of the billet is then heated in the first of the two box type furnaces and goes through the same cycle and dies as the first end to produce the finished forging. In this cycle, efforts are made to hold the axle to the specified length, but in some cases the forging has to be stretched subsequently to bring it within length limits. Such forgings, because of the multiple operations, are forged rather slowly but are completed at the rate of about 11 per hr.

Among the many forgings for which billets are heated in the new rotary hearth furnaces are numerous parts produced from stainless steel. One such, from type 316 stainless steel, shown being forged in fig. 4, is a valve component that weighs 11.8 lb when trimmed. Forging is done on a 4000-lb steam hammer using a die with rolling, edging and forging impressions, at the rate of about 40 an hr, including the trimming. Trimming is done hot in an adjacent press and is followed by final restrike in the forging impression. Rotary furnaces work better on stainless steel than box types because of relatively long soaking at moderate temperatures. Not until just before removal from the furnace do the billets attain the optimum forging temperature which, with 316 steel, is 2200°-2250°F.

Something of an innovation in drop forging, most of which is done on steam hammers in this plant, is the use of a Ceco steam operated ham-

FIG. 5—This two-pound shock absorber arm is forged from the bar in a 2500-lb Ceco steam-operated hammer at the rate of 225 an hr.



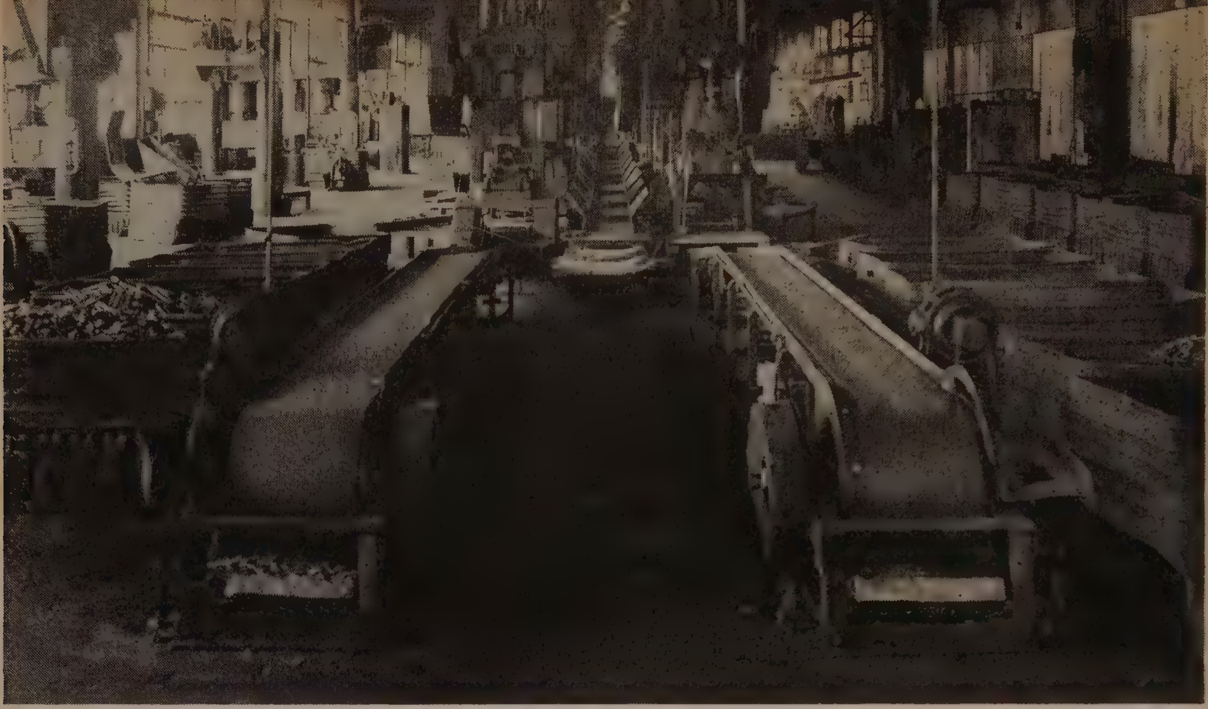


FIG. 6—Two rows of trimming presses are used to cold trim flash from small forgings that drop onto belts running below the presses. Belts deliver forgings to inspection stations in foreground, where sorting is also done.

mer of 2500-lb capacity for light work. This hammer forms 2.09 lb shock absorber arms from 1035 steel that is forged off the bar, as shown in fig. 5, at the rate of 225 an hr. Immediately after forming, this forging is hot trimmed and hot pressed on adjacent equipment.

Although many drop forgings are produced in single dies with two or more cavities, other forgings are brought to final size and shape in a separate finish-forging die in which the work may be struck only a single sizing blow. An objective in such cases is to keep the forging in the die a minimum length of time largely because the longer it remains the more heat is transferred to the die and the more rapidly does the impression deteriorate.

In the final forging cavity, whether in a block having multiple cavities or only one impression, the forging is sized. This impression must be precisely sized and is the most expensive of those used. In consequence, if its useful life can be extended, die upkeep costs are reduced. Hence, it is economical to minimize wear. This is of special importance on long run jobs because the effects of die wear determines how many sets of dies will be required.

On all large forgings and on many smaller ones, including nearly all in alloy steels, hot trimming of flash is most economical and is done immediately after forging. For many carbon steel forgings, however, especially small ones, flash can be trimmed cold at about double the rate of hot trimming. Most cold trimming is done on trimming presses arranged in two rows on elevated supports so that a belt conveyor can be made to pass under each press in the row. Lift trucks deliver to these presses tote boxes of forgings to be trimmed.

Trimming is done in dies and these are so made that the forging is pushed through the die, as the flash is trimmed, and falls onto the belt. As shown in fig. 6, the belts that run below the two rows of trim presses are extended to run at bench height beside stations where inspection and sorting are done.

Each inspector removes those forgings that he must inspect and throws those that pass inspection into a tote box near his station but on the opposite side of the belt. The return side of the belts goes back just above floor level before returning again under the presses. Between the two rows of presses is a third belt conveyor onto which trim press operators push flash. This belt, at the far end of fig. 7, is elevated and drops the flash into a tote box for disposal.

Near the windows at left of fig. 6 are three hydraulic presses used to coin or straighten forgings that require such operations. Coining sizes forgings within closer limits than it is possible to hold consistently in hot forging alone. Some straightening of forgings is done also under a 1000-ton knuckle joint press.

Somewhat unusual in a forging plant of this size is the absence of heavy shears for cutting billets for forging from heavy bar stock. This is largely because it has been found more economical to heat heavy bars for shearing in their softened state than to do cold shearing in large shears.

Heating is done in a box type furnace having a long inclined hearth set so that the loading slot faces the storage yard and can be fed from outside the building. Bars at red heat drop from the lower edge of this hearth onto a roller conveyor along which the bars are fed through an alligator shear where slugs are cut off.

New Production Ideas

A turbine blade fatigue tester, a carbide tool grinder, an all-purpose cutting machine, belt and disk sanders, a thickness detector, a ball-bearing grease tester, ac welders and a portable welding head, goggle valves, a valve refacer, portable tappers, drill and milling attachments and various other small tools and accessories are discussed this week.

Turbine Blade Tester

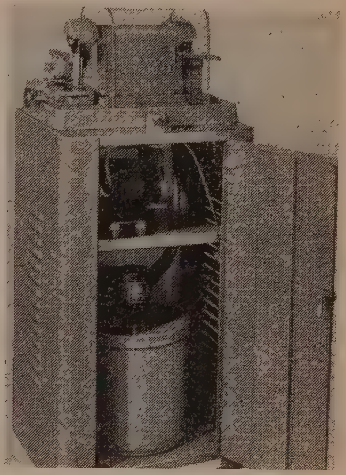
THE Sonntag SF-5 fatigue tester subjects turbine blades ind materials to fatigue loads unler conditions similar to those in iigh temperature service. This nachine applies alternating flexure oads up to ± 1350 lb to a specimen t a frequency at 3600 cycles per nin while it is held at temperaures up to 1800°F and is under ensile loads up to 8000 lb. Flexure oads are applied by the centrifugal orce of a mass rotating at contant speed in an oscillating frame. 'his force is accurately controlled y varying the distance between he mass and its center of rotation. nertia forces of this mass are comensated by springs and calibratng weights. Automatic controls naintain a constant tension of the pecimen. Tensile loads, applied by motor that drives the sprocket, re controlled by means of a sensiive relay and a switch in proving ing. The machine is mounted on frame that floats on seismic prings. *Baldwin Locomotive Vorks. For more information, heck No. 1 on the attached postard.*

neumatic Riveter

NCORPORATING features not found on standard machines, a neumatic riveter has been degned to produce consistently uniorm work with high operator effiency and minimum scrap. The air motor which rotates the hammer piston has adjustable speed and the hammer rotates only when riveting to reduce air consumption. The motor may be removed and piston locked against rotation by keyed guide collar, for riveting rectangular lugs. Peins and anvils are quickly replaceable. Anvil elevating mechanism can be positioned to suit height of the work and fine adjustment is obtained with capstan type nuts. An automatic lubricator causes air going to piston to entrain a controllable amount of oil to keep the piston properly lubricated at all times. An automatic timer unit for controlling length of hammering cycle is adjustable from 2 sec to 3 min. *Hill Machinery Co. For more information, check No. 2 on the attached postcard.*

Carbide Tool Grinder

SUITABLE for grinding clearance angles and chip breakers on single point tools and inserted blades for milling cutters, a carbide grinder which accommodates tools having up to 1 in. shanks, features small diameter wheels and is equipped for wet grinding. The spindle is engineered to run smoothly at 9000 rpm and is mounted in removable cartridge type ball bearing unit. Spindle speed is said to permit high surface speed for small less expensive wheels for faster and more efficient performance. Diamond wheel has ¾-in. wide grinding surface for off-hand grinding.



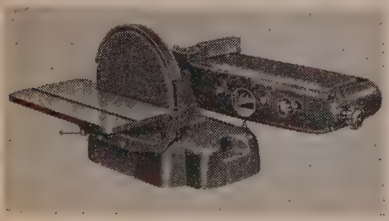
An all-angle vise gives quick setups for chip breaker grinding. Grinder is equipped with cabinet, 1/3-hp motor, coolant pump, wheel guards and 2 diamond wheels. The machine is obtainable in single and double end, or off-hand and chip breaker models. *U. S. Diamond Wheel Co. For more information, check No. 3 on the attached postcard.*

All-Purpose Shear

A NEW all-purpose, low-cost cutting machine for general shop use utilizes the principle of successive, fast shearing action that is claimed to produce a continuous cut with a finished and burr-free edge. The shear, known as the Truedge Shear, will cut any material such as brass, expanded metals, metal screen, and stainless steel. Material is not punched, but is sheared by a principle that eliminates resistance to feeding and turning. The lower tool remains stationary while the upper tool which is spring loaded reciprocates vertically. Cutting speeds are rated at 10 to 40 fpm. Stainless steel up to 6 U.S. gage and mild steel up to 5 gage can be cut. The shear is equipped with a ¾ hp motor and requires no extra equipment such as pilots, strippers, or templates. For cutting irregular shapes and small circles curved tools are used. The machine requires two adjustments: length of stroke and depth of penetration. *Elge Associates. For more information, check No. 4 on the attached postcard.*

Belt and Disk Sander

LONG, short and wide metal, wood and plastic stock can be handled on a belt and disk sander designed for sanding irregular shapes, edges, ends, curves, angles and double angles. The table may be used with disk or belt. The belt operates in horizontal and vertical positions and guards and stop are removable for sanding curved pieces on either drum. Herringbone slots in the belt sander table top keep the underside of the belt smooth. Specifications: 10-in. diam. disk; 27 13/16 x 4-in. belt; 7⅞ x 15-in. table; 4¼ x 11⅞ in. belt support table; 3¼ in. diam rubber faced drums; belt speed 1150 fpm; spindle speed 1360 fpm; motor recommended, ¼ or 1/3 hp, 1725 rpm. *Atlas Press Co. For more information, check No. 5 on the attached postcard.*



Stamping Trimmer

DEVELOPMENT of a new light-duty stamping trimmer for cutting up to 1/16-in. mild steel has been announced. This model, the 48-L, is an adaptation of the standard heavy-duty machine, and brings the benefits of machine trimming to the smaller shops and those handling small runs on a job-shop basis. Provision has been made for constant or variable-speed drive. The drive is through a differential type transmission that permits the use of rolls or cutters of different diameter without variation in peripheral speed. *Whiting Corp. For more information, check No. 6 on the attached postcard.*

Goggle Valve

STAINLESS steel bellows is one of the design features of a new totally enclosed bellows type goggle valve now available. Goggle plate is solid, circular in shape, pivoted about an axle, and is entirely enclosed in the body of the valve. One valve seat is permanently fixed in position and the other is attached to a continuous stainless steel bellows which is moveable. When valve is open the goggle plate is housed in an enclosure below the valve seats and when closed, the plate is in the gas line between the fixed and movable seats. Pressure is applied to stainless bellows causing seats to contact the goggle plate. Enclosed construction is said to prevent cutting of plate and valve seats as pressure within the gas main and valve housing is equal. Misalignment of valve and main or distortion from parallel of valve seats is compensated by expansion joint action of bellows. Valve is offered in sizes from 24 to 144 in. *Edgar E. Brosius Co. For more information, check No. 7 on the attached postcard.*

Thickness Detector

FOR nondestructive thickness measurement from one side of materials including steel, copper, aluminum, glass and unfilled plastics, a new model of the Audigage thickness detector is recommended for applications including tanks, pipes, ship hulls, boilers, pressure vessels and sheet metal. New features include instrument indications for use in noisy locations; adjustable frequency modu-
lation to facilitate measurement c
seriously corroded equipment; spe
cial permeability tuning unit fc
increased sensitivity over the whol
frequency range; increased fre
quency range for measuring ste
down to 1/16 in. Special range
can be provided for thinner ma
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Branson Instruments, Inc. Fc
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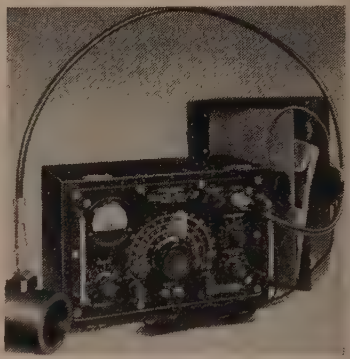
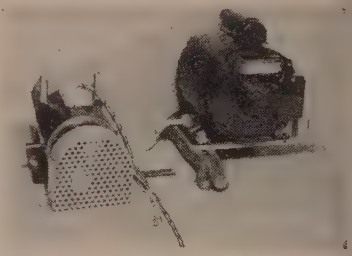


Ball-Bearing-Grease Tester

NEW equipment for testing ba
bearing grease accelerate
those conditions that contribute t
the destruction of a grease, an
enables motor users and greas
manufacturers to compare the pe
formance of one grease with ar
other. The equipment consists c
the ball bearing grease tester an
a control box. The tester (illu
trated) is a small motor-driven un
with two bearings, one for testin
and the other as a guide. A 500-
heater, located between the bea
ings, simulates the source and flov
paths of heat in an electric moto
The temperatures of the outer rac
of the bearings are measured by
pair of copper-copnic thermc
couples. The control box consists c
two thermostats and a panel c
which are mounted a motor switc
a line switch, an actuation butto
and a time meter. The time mete



marked in tenths of hours, measures time on a cyclometer-type up to a period of one year. *General Electric Co. For more information, check No.* 9 *on the attached postcard.*

Ac Welders

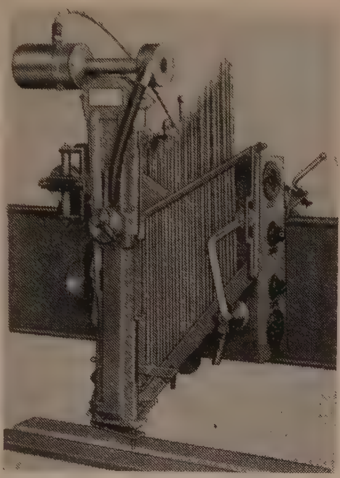
NEW Sureweld ac welders for shop and industrial use are made in 12 models; seven for high-speed, heavy duty fabrication, and five for light production work. Advantages found in the models include a four-coil transformer with movable magnetic shunt that assures fine welding characteristics at every point within the output range. With correct ratio of open circuit to arc voltage, the Sureweld provides faster burn-off, proper penetration, and correct breakdown of usually hard-to-handle alloy rods. A stepless full range output control gives the precise welding heat needed. *National Cylinder Gas Co. For more information, check No.* 10 *on the attached postcard.*

Valve Refacer

THE new Thor 99 valve refacer is equipped with a double-grip collet and new speed chuck for fast, precision valve refacing at all standard angles. Sliding heads feature smooth-riding three-point suspension on hardened and ground slide rods. The collet is hardened, ground and internally lapped, gear driven by its own individual motor. A new speed chuck permits large butt-end valves to be admitted and released with only one turn of the 2¼-in. hand wheel. *Independent Pneumatic Tool Co. For more information, check No.* 11 *on the attached postcard.*

Arc Welding Head

A NEW portable welding head for continuous arc welding with standard coated electrodes produces faster and better welds than hand welding, it is reported, as the arc is not interrupted during automatic change of electrodes. It is recommended for most welds that have previously required hand arc welding and it is claimed one operator can tend two machines in production work. The first model will weld sheet and plate, join right angle or oblique sections, and longitudinal welds on curved surfaces such as pipes and tanks may be made. Electrode magazines designed to permit overhead welding and another model for butt welding pipe and tube will also be available. The welder is equipped with necessary controls and adjustments of welding current, regulation of arc length, as well as vertical and horizontal adjustments. Carriage speed adjustments between 1 and 40 ipm are made. Track of fabricated tubing is used to guide the carriage. *Elge Associates. For more information, check No.* 12 *on the attached postcard.*

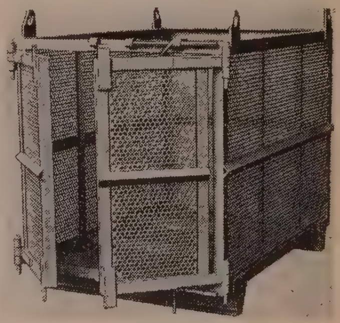


Furnace Atmosphere Indicator

THE relative oxidizing or reducing conditions of the atmosphere within a furnace, or metal heat treating oven can be indicated with a new instrument that analyzes the gases continuously in such a way that a complete record of the furnace conditions during an entire run is furnished automatically on an electrical indicator. The instrument utilizes the combined physical properties of the mixed gases occurring in the combustion of fuel in such a manner that an empirical indication is obtained free from ambiguous indications. Each gaseous component of combustion contributes to the final reading approximately proportionate to its relative oxidizing or reducing effect. The instrument does not require any adjustments once put into use and the normal furnace controls are operated in the usual manner. The indicator shows the direction of the atmospheric change within a furnace in a positive manner. It is graduated from 0 to 25 and operates from 115 v, 60 cycle power source. *Charles Engelhard, Inc. For more information, check No.* 13 *on the attached postcard.*

Immersing Basket

FABRICATED of high-tensile, corrosion resisting steel, for positive resistance to acid pickling solutions, an immersing basket has been designed for transportation by crane or fork lift truck. It features heavy-duty construction and is supplied in any size to meet varying specifications. *Phillips Mine & Mill Supply Co. For more information, check No.* 14 *on the attached postcard.*



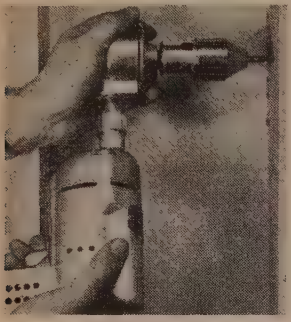
Portable Tappers

AUTOMATICALLY reversible push-pull tappers are pushed by the operator for forward rotation and pulled for reverse. The tools are suitable for all tapping operations up to ¼ in. capacity in ⅛-in. sheet steel and cleaning up to ⅜-in. tapped holes, and are offered in 12 models with a speed range including 450, 750, 1100, and 2500 rpm. Features include high torque; variable speeds; pistol grip, button and lever control; simplified tap changing and adjusting; and trouble-free reversing mechanism.

Standard equipment includes a 10-5/16 in. Jacobs tapping chuck with wrenches, speed regulator and ¼-in. hose. *Aro Equipment Corp. For more information, check No. 15 on the attached postcard.*

Drill Attachment

WITH an angle-head attachment, right angle drilling is possible with an electric drill. A specially designed ½-in. Jacobs chuck fits the bull buffer, which in turn fits the chuck of any electric drill. The bull buffer's gear reduction adds power to the drill, reduces its speed so that drilling can be accomplished without injury to the drill. *E. K. Bertram Engineering Co. For more information, check No 16 on the attached postcard.*



Collet Chuck

DESIGNED to speed production drilling and tapping operations, a mechanical linkage adapts the Goodwin quick-acting collet chuck to any standard drill press in approximately 15 min with the use of two bolts. Linkage connects the drill quill to chuck collar so that chuck is automatically closed and locked as tool approaches workpiece. Return of the drill press handle releases the workpiece and the chuck can be fitted with a spring ejector to facilitate rapid removal. *Goodwin Mfg. Co. For more information, check No. 17 on the attached postcard.*

Portable Tools

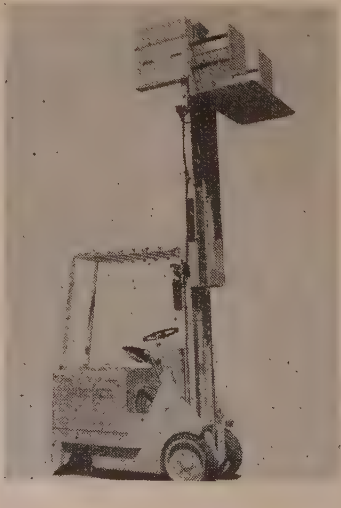
A NEW line of 360 cycle portable abrasive tools includes small wheel grinders, cone sanders, 4, 6, and 8-in. straight grinders, 6-in. cup grinders, 7 and 9-in. sanders, and 9-in. polishers. The tools are claimed to provide more power per unit of weight than corresponding air, 180 cycle or universal tools. The motor is a squirrel cage induction type in which the speed is governed by the frequency of the power supply which is 360 cycle current supplied by an inductor frequency converter or motor generator. Motor spindle speed is 21,600 rpm. For heavy operations the motor speed is geared down to the correct spindle speed. Cooling is provided by a solid web fan which draws air from the rear through 12 cooling channels and expels heated air to the front end of the tool. *Rotor Tool Co. For more information, check No. 18 on the attached postcard.*

Weld Bosses

WELD bosses, in a variety of shapes and dimensions, have been made for projection welding to sheet metal and to thin metal plates. Thicknesses range from 1/16 to ¾ in. and the shapes are round, square, and flanged. The round and the flanged bosses are available in low carbon steel, brass or 18-8 stainless steel. The square bosses are of low carbon steel or brass. Production sizes are standardized in thickness, outside dimensions, and hole diameters. *Ohio Nut & Bolt Co. For more information, check No. 19 on the attached postcard.*

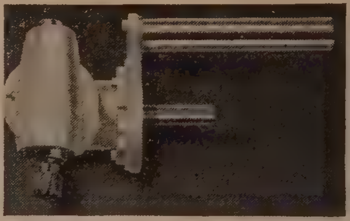
Pusher Attachment for Trucks

TO simplify the handling of metal drums, a twin pusher attachment has been designed for use on standard Skylight electric fork trucks of all capacities. With high pressure hydraulic operation and individual push button controls, the rams can be used independently or simultaneously. The unit includes its own motors and pumps. It can be detached quickly and be replaced by standard forks. An overhead guard protects the operator. *Automatic Transportation Co. For more information, check No. 20 on the attached postcard.*



Universal Milling Attachment

RUGGED construction, simple design, versatility and ease of installation on any small milling machine feature a new universal milling attachment. It is equipped with two heavy duty steel driving gears and a large idler gear to take the heaviest cuts within the capacity of the milling machine. The attachment is furnished with an arbor of the taper required for the milling machine with which it is used, and is driven by the milling machine spindle at the spindle speed. Equipped with a No. 7 B&S taper spindle, this attachment can be used for milling, drilling, or boring on any angle or at any plane. *U. S. Machine Tool Co. For more information, check No. 21 on the attached postcard.*



Boring Tool

E-Z SET boring tools are now available with improvements designed to increase tool efficiency and service life. Improvements include elimination of the gib in locking the tool block dove-tail to assure faster action, more positive locking of tool block, permitting wear adjustment; hard chroming of all wear surfaces; and flash chroming of all other tool parts to provide corrosion protection. Increased capacity has been provided by three-position feature for boring bar in tool head. These tools are available in models No. 30, 31 and 32, with maximum boring bar capacities of ½, 1 and 1½ in. respectively. They cover a boring nge of from ⅜ to 20 in. Shanks e interchangeable and can be em- oyed in any jig bore, milling ma- ine, boring mill, automatic, and her machines. *Maxwell Co. For ore information, check No. 22 on e attached postcard.*

ouplings

ULTIPLE hp couplings from 2 to 100 hp at 1750 rpm e available in 17 sizes. The 1/50 15 hp couplings have 15° tor- nal deflection under rated load. zes 30 to 100 hp have 3° deflec- n and it is claimed that this de- ction gives unusual vibration iso- ion. Couplings will accommodate least 2° angular and 1/32 in. rallel misalignment. Neoprene xing elements operate in shear d are bonded to steel plates. uplings are permanently quiet, quire no lubrication, and are un- ected by abrasives such as emery, nd, crushed rock or metal par- les. *Lord Mfg. Co. For more formation check No. 23 on the ached postcard.*

ess Brakes

TOPPING of presses at any point in the stroke to avoid erator injury and damage to es is possible with the introduc- n of a pneumatic friction clutch d brake for use on standard iss flywheel type inclinable esses and smaller geared sizes. eviously, this type of brake has en offered only on large geared clinable models. The friction tch permits an inching action to cilitate setting up certain types dies. The press may be re- rsed, allowing the punch to be cked away from the die without mpleting the stroke, when neces- ry. *E. W. Bliss Co. For more in- rmation, check No. 24 on the at- hed postcard.*

rtable Shop Cranes

HREE new portable shop cranes are recommended for ndling motors, engines, castings, , in and out of machine tools, s in and out of punch presses, loading and unloading trucks d moving heavy items in and ound the shop. No. 1-C has a t up to 7 ft and No. 2-C has a ximum lift of 10 ft 8 in. It is ted at 4000-lb capacity but has en tested to 7000 lb. On Model C, boom can be extended to 79 in. hen folded down it is 48 in. from the ground and fits under 6 ft doorways 32 in. wide. This model is available with hydraulic operation and extra reach and lift capacities. Safety winch crank is turned in clockwise direction to lift. Seven turns lift approximately 1 ft. Load is held in position when desired height is reached. *Grand Specialties Co. For more information, check No. 25 on the attached postcard.*

Phosphor Bronze Electrode

FOR arc welding of copper, tin bronzes, brasses, cast and malleable iron, galvanized iron and dissimilar metals, a new phosphor bronze electrode is available in a range of sizes, including 3/32, ⅛, 5/32 and 3/16 in. The electrode is recommended for bearing and corrosion resistant applications, and for general maintenance and repair welding. Welds made with it have a tensile strength of more than 40,000 psi and 70 to 80 Bhn. *All-State Welding Alloys Co., Inc. For more information, check No. 26 on the attached postcard.*

Counter and Stacker

COUNTING objects that come off the production line up to a speed of 200 per min, stacking them into piles, and transferring the counted stack to the conveyer system with each stack electrically counted and ready for the next operation, are the functions of an automatic counter and stacker said to employ a new idea for handling flat products. The machine is designed to handle pieces from 9 to 82 in. wide and to transfer the counted stack in 1/3 of a second. No setup time is required. *Superior Punch Press Co. For more information, check No. 27 on the attached postcard.*

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Machine Tools

BOOKLET describes features of ram, saddle and electro-cycle turret lathes, single and multiple spindle automatics, and precision tapping and threading machines. Information on supplementary equipment is also given. *Warner & Swasey Co. For more information, Check No. 28 on attached postcard.*

Blowoff Valves

VALVES for blowoff service are described in bulletin E-120. Quick opening straight-lever and rack-and-pinion valves, slow opening rack-and-screw valves, angle blowoff valves and 5 types of duplex blowoff units are included. *Everlasting Valve Co. For more information, check No. 29 on the attached postcard.*

High Speed Steel

BULLETIN gives information on a molybdenum tungsten high speed tool steel. Hardness data, heating instructions and recommended uses are reported. The steel contains 5 pct Mo and 6.5 pct *W. Braeburn Alloy Steel Corp. For more information, check No. 30 on attached postcard.*

Jolt Squeezing Strippers

BULLETIN 106 describes the features of arm-type jolt squeezing strippers. Bulletin 110 shows four models of jolt squeeze pin strippers, and bulletin 113 discusses plain jolt molding machines. Specifications and dimensions are given for all units. *Milwaukee Foundry Equipment Co. For more information, check No. 31 on the attached postcard.*

Packing Manual

SIXTH revision of packing manual gives instructions and tips on packing a variety of products from automobile parts to prefabricated houses. *Sherman Paper Products Corp. For more information, check No. 32 on the attached postcard.*

Aluminum Treatment

SURFACE treating chemical which by dipping, spraying or brushing produces a protective coating on aluminum, is described in bulletin. Dipping requires a 2-min treatment, spraying only 20 sec and brushing 1 to 5 min. *American Chemical Paint Co. For more information, check No. 33 on attached postcard.*

Acetylene Generators

PORTABLE acetylene generators, featuring a visible carbide charge, are discussed in booklet. Cost figures are given to show that if carbide is $5.75 per 100-lb drum, the cost of acetylene will be $1.21 per 100 cu ft. *Sight Feed Generator Co. For more information, check No. 34 on the attached postcard.*

Cranes and Shovels

CATALOG 79 gives information on convertible shovels, draglines and cranes. Units are electrically welded throughout, use antifriction bearings throughout and are equipped with highly sensitive air control. *Orton Crane & Shovel Co. For more information check No. 35 on attached postcard.*

Dew Point Indicator

INSTRUMENT for rapid determination of the dew point of any noncorrosive gas is described in bulletin 4017-B. *Illinois Testing Laboratories, Inc. For more information, check No. 36 on the attached postcard.*

Metallizing Equipment

METALLIZING guns, wire and accessories are described in catalog 401. Wire control and straightener unit to increase spraying speeds, a gas flow meter unit to assure maximum efficiency and other accessories are featured. *Metallizing Engineering Co., Inc For more information, check No 37 on the attached postcard.*

11/18/48

THE IRON AGE, New York 17, N. Y. **2**

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Assembly Line . . .

WALTER G. PATTON

• General Motors impartial umpires are expendable . . . Alexander is sixth since 1940 . . . Briggs shops around for Pittsburgh plant . . . Most auto operations to remain in Detroit.

DETROIT — If you have personal ambitions to become an umpire, you had better choose baseball rather than industry. Particularly in the automobile industry, umpires are expendable.

This fact was re-emphasized recently when Gabriel N. Alexander of Detroit was selected as Impartial Umpire under the agreement between General Motors and the United Auto Workers' Union (CIO), succeeding Mr. Saul Wallen of Boston. Mr. Wallen has served less than a year. He is the sixth umpire since 1940. About half of the GM umpires have retired voluntarily; the others have been asked to step down from their $20,000 a year job for a variety of reasons.

Sources close to the Detroit labor picture agree that union politics has sometimes been a factor in making an umpire change. Alleged fraternization may be another cause. In any case, a labor umpire is usually as lonely a figure as the "man in blue" who makes the decisions on the baseball field.

It is to the credit of both GM and UAW-CIO that neither party has thus far permitted the umpire system to deteriorate to a point where a single unfavorable decision or a prospective unfavorable decision has resulted in a change of umpires. Vigorous attacks are sometimes made on the umpire in union publications. Once a case has been submitted to the umpire, it cannot be withdrawn by either party except by mutual consent. This has probably helped to keep down the umpire turnover figure.

General Motors and UAW-CIO pioneered the umpire system in settling labor disputes back in 1940. Every decision of the umpire since that time has been accepted and carried out by both parties.

It should be emphasized that the umpire for GM operates somewhat differently than the Ford or Chrysler umpires. The umpire for both Ford and Chrysler functions, broadly speaking, as a mediator and an arbitrator. In the case of GM, the umpire often takes direct testimony to determine the facts. After the facts are determined he calls the company or the union "safe or out" under the contract. His powers are precisely limited but in those fields in which he functions, the GM umpire makes extremely important decisions. These decisions are gradually building up to the equivalent of a code of labor law for both parties.

Under the GM setup the umpire hears cases involving discrimination for union activity; recognition; representation; grievance procedure; seniority; disciplinary layoffs and discharges; call-in-pay; working hours; leaves of absence; strikes and stoppages; vacation pay and vacation pay allowances. While the umpire has full discretion in cases of violations of shop rules, strikes and stoppages, he cannot order back pay.

UNDER the GM system, a systematic effort is made to wash out grievances at the start. This is often accomplished between the worker and his supervisor. Where this step fails, the grievance is put in writing and submitted to the Shop Committee. If the grievance is still unadjusted, the case g next to the Appeal Committee, c sisting of top union and top p management officials.

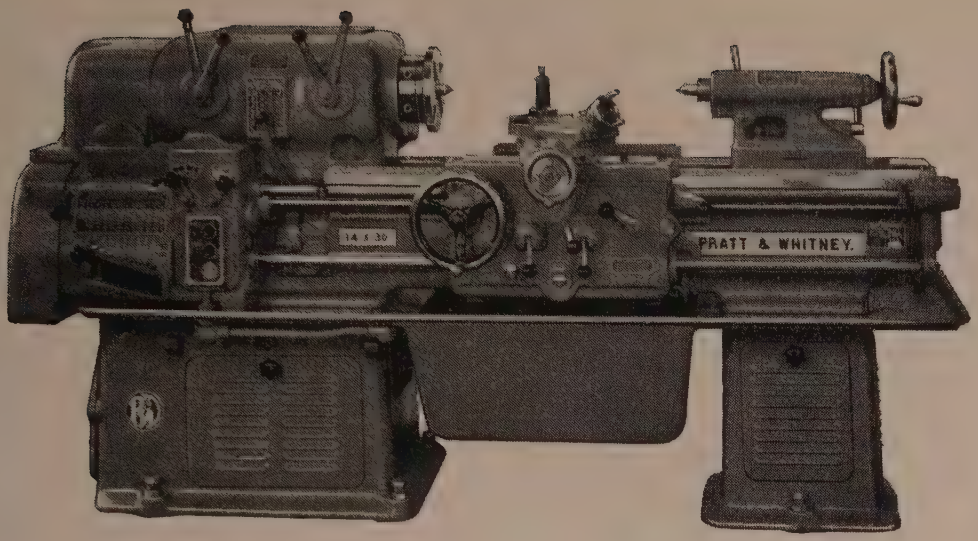
Failure to settle the grieva at any of these levels qualifies dispute for submission in writ to the umpire, assuming the qu tion falls within his delega powers.

During the year 1947, in addit to thousands of cases settled by worker and his supervisor, 12, grievances in all of GM's pla were carried through the first s of the grievance procedure. proximately 11,822 were ta through the second step. Appro mately 3600 reached the Ap Committee and the umpire ruled only 209 cases. The number cases heard by the GM umpire substantially less than the num of cases taken to the umpire other automotive companies their unions.

About 45 pct of the GM cases volved wages, seniority or work conditions. It should be emp sized that under the GM syst the umpire functions mostly in area of disputes involving work standards and wage classificati particularly wage disputes aris from attempts to classify new j

Mr. Alexander started his 1-y service Nov. 15. His salary expenses are shared jointly the company and the union. viously, he has acted as arbi tor for the United Automo Workers, United Rubber Work United Furniture Workers, Uni Dairy Workers and the United E trical Workers. He has also ser the Teamsters of the AFL the International Assn. of Mach ists. He is an alumnus of Wa and Harvard Universities. Alex der graduated from the Univers of Michigan Law School in 193

CONFIRMATION of the rep that Briggs Mfg. Co. is sh ping around for a plant brings three the number of auto conce who have officially announced th intention of locating in the Pi burgh area. While no comm ments have been made, the fact t Fisher Body and Kelsey - Ha



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Wheel have made similar moves would indicate that Briggs has serious intentions. Current reports indicate that Timken-Detroit Axle and other concerns may be contemplating a similar move.

It is reported that the plant under consideration would employ about 1200 workers. Briggs is now operating eight Detroit plants. An additional plant is located at Evansville, Ind.

While the company obtains a substantial amount of its steel in the Pittsburgh area as reported—from Jones & Laughlin, Wheeling and Weirton — other steel sources, including conversion sources, are relied upon to meet its growing steel requirements. In addition to Plymouth and Packard bodies, Briggs makes a large number of stampings for DeSoto, Dodge and Chrysler. Recently the company started producing Willys station wagon bodies and other vehicle stampings. A large plumbingware division is also operating in Detroit.

Most Detroit steel men agree that while the f.o.b. steel distribution system is a factor in the present industrial movement, the controlling consideration is rising freight rates. This leads many of the crystal ball gazers here to the conclusion that in addition to moving part of the auto industry from Detroit to Pittsburgh, the railroads may some day learn they have played a prominent part in bringing greater steel production to Detroit.

The new McLouth electric steel plant, these sources say, is only the beginning. Consumer interest in such a move is indicated by the fact that more than half of the financing of the new McLouth mill has been furnished, it is reported, by prospective steel consumers.

Several conditions in the Pittsburgh market have proved to be obstacles to movements out of Detroit, it is said. Some auto parts—frames are an example — would seem to have a more logical place in Detroit at the present time. Also, the housing situation in Pittsburgh is not encouraging and some Detroit executives are none too confident about the Pittsburgh labor market.

In the case of the new Fisher Body plant, the logic of the Pittsburgh move is easily demonstrated. Considerable savings in freight charges will be realized on movements of both steel and scrap. In addition, finished stampings can be distributed from Pittsburgh to the eastern seaboard, Atlanta and Cleveland from a more central point. However, in the case of Briggs supplying to Chrysler, all of the production is in the Detroit area. Up to the present time, Chrysler has not utilized the knock-down assembly technique adopted by General Motors and Ford.

THE present picture may be reduced to the simple fact tha any Detroit producer who is not assured of an adequate steel supply before moving to Pittsburgh is, a one source commented "putting its head in a bear trap." Assured o adequate steel supply, the housing labor problems will still requir considerable study before a decisio is reached, this source added.

Meanwhile, there are many Detroiters who argue strongly tha steel can be made just as economically in Detroit as it can be produced in Pittsburgh or Chicago They point to the success of th Great Lakes operation to prove th point. These sources contend tha if electric melting is used, the Detroit power situation is much mor favorable than it would be in man other cities. Edison officials her have assured the company's customers that, barring unforeseen difficulties, no electricity famine i foreseen here this winter: Withi a year or two, the Edison facilitie should be a good jump ahead of customer demand, it is promised.

These sources also argue that i the auto industry leaves Detroit only limited segments will go i the early stages. Most auto operations, it is contended, will logicall remain here. As one observer expressed it, "It looks like Detroit i going to trade some automotiv capacity for some steel capacity Even if this area suffers a net los by the movement, the loss will no be great. And it is bound to b much less than a lot of people ar predicting nowadays."

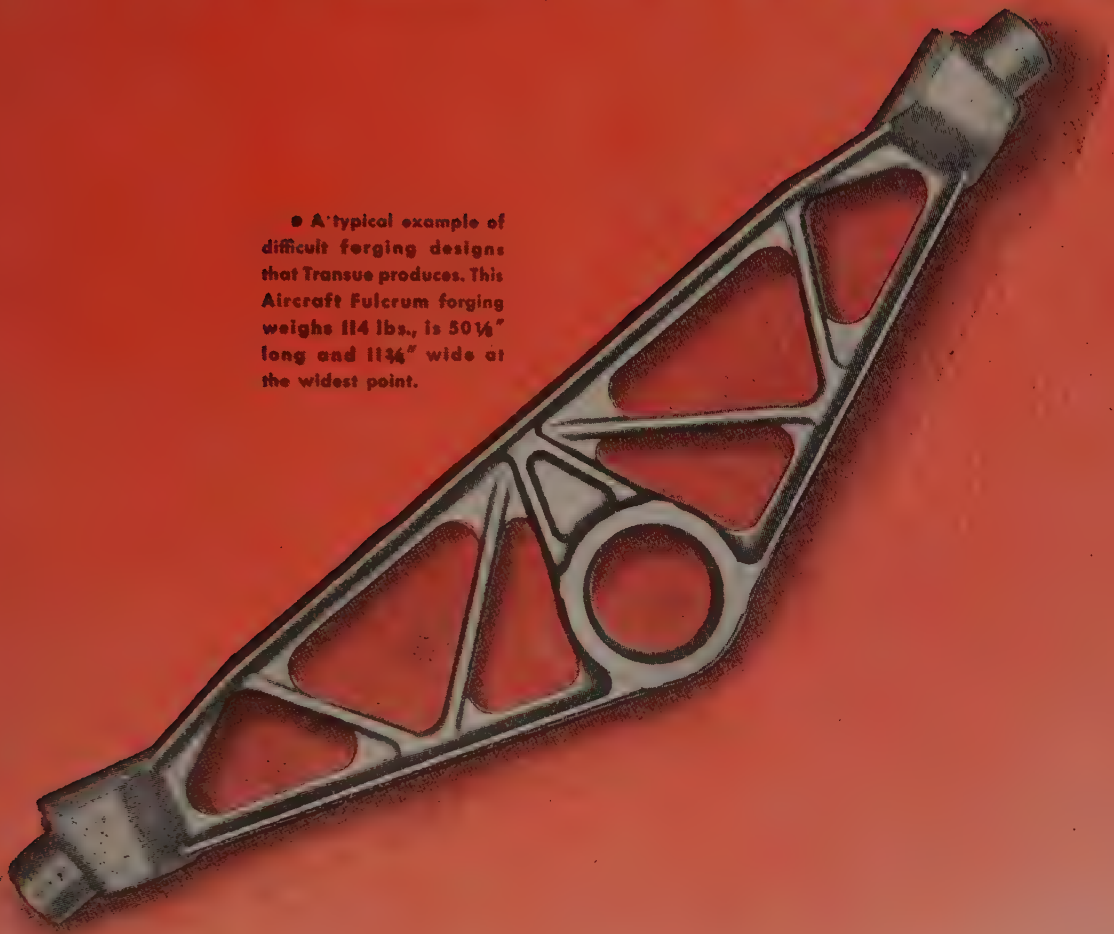
* * *

LAST week General Motors Truc & Coach Div. started deliver of 900 coaches for the City of Ne York and 100 for the City of Chicago. The new coaches are 51-passenger capacity for New York an 55-passenger for Chicago. Thes are the largest single deck moto coaches ever built for city transportation, it is reported.

Representatives of the dail papers, radio and trade press wer present last week when Col. Sidne H. Bingham, Commissioner, Boar of Transportation for New Yor City, took delivery of the first ne GMC coach.

M. B. BROOKS, assistant car foreman of the Detroit, Toledo & Ironton, R. R., is shown blocking a load to the nailable steel floor of a gondola. More than 600 cars are now equipped with this unique construction which consists of 8 in. channel laid crosswise in the car. Soft nails driven into grooves are deformed by the bending action of the channel flanges. The floors are made of Great Lakes' high tensile NAX steel.

TRANSUE FORGINGS



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VER 50 YEARS OF FORGING PRODUCTION EXPERIENCE

Washington . . .

EUGENE J. HARDY

• Industry balks at releasing distribution data . . . New trade agreements coming . . . Skilled DP's available.

WASHINGTON—A look at another kettle of trouble that has been brewing for steel producers for some weeks now reveals that Senator Martin, R., Pa., is having trouble in extracting statistics on steel shipments from the major producers.

Two months ago, Senator Martin's steel subcommittee of the Senate Small Business Committee asked the nation's principal steel producers to tell his subcommittee in detail where they sold their steel in 1940 and in 1947 (THE IRON AGE, Sept. 16, p. 123). Senator Martin said that a pretest by sub committee investigators at offices of the U. S. Steel Corp. and Bethlehem Steel Corp. disclosed that the information he sought was available.

Senator Martin had at first planned to ask his distribution questions—contained in a bulky, four-part questionnaire — of 20 principal producers. He finally cut the list down to 15 companies—U. S. Steel, Bethlehem, Republic, Jones & Laughlin, Youngstown, National, Inland, Armco, Colorado Fuel & Iron, Pittsburgh, Granite City, Sharon, Wheeling, Follansbee, and Alan Wood. He asked for replies in 30 days.

But the replies didn't come back to Senator Martin and, if the larger producers have their way, they won't be coming back. The producers are afraid—and with good cause—that the information (a) may leak to competitors, despite assurances that it will be held in confidence (b) that all or part of it may be used by certain members of Congress or by the Administration for political purposes.

Some of the producers have made a counterproposal to Senator Martin. Instead of your committee doing this work, they propose, let a firm of certified public accountants do the job. And, furthermore, let the figures show only totals of shipments, rather than give product-by-product and customer-by-customer breakdowns, they ask. Mr. Martin is now mulling over these offers.

THE reluctance of the producing companies to turn over their records to Mr. Martin's subcommittee is understandable. In the past, other data submitted in confidence to congressional committees or to agencies or departments in the executive branch of the Federal Government has unaccountably "leaked" despite assurances of privacy.

Then, too, with the strong possibility of Senate Small Business Committee leadership passing from the hands of Senator Wherry, R., Neb., to Senator Murray, D., Mont., there is ample reason to suspect that anything the industry may say in the Martin questionnaire will be used against it. For example, Senator Murray long has advocated that the Federal Government build and operate new steel capacity if the industry is unwilling to expand in accordance with his personal views.

Steel was in the Washington spotlight during most of 1948 and it looks as though it will be in the spotlight even more in 1949. Both the White House and the Congress will be on the lookout for hand scapegoats for shortages and big prices.

•

More Nations Due to Be Included in Reciprocal Trade Agreement Pact

Washington

• • • Spadework for adding a other 11 nations to the 23 no taking part in the reciprocal trad agreements program is well unde way. The actual horse trading wi take place in Geneva next April.

Nations which have asked t take part in the program worke out at Geneva in 1947 are Swede Denmark, Finland, Italy, Greec Peru, Dominican Republic, El Sa vador, Nicaragua, Uruguay, an Haiti. Individually, imports fro these nations are small but as whole the volume is currently abou $120 million monthly.

Three basic steps have been take by the United States in preparation for the April trade conferenc The State Dept. issued forma notice in September of its intentio to engage in negotiations with thes 11 nations; immediately followin the election, the White House submitted to the Tariff Commission list of items for which it was suggested that import duties might b modified in exchange for concessions to us. The Commission ha set Dec. 7 as the date on which i will begin hearings on this list.

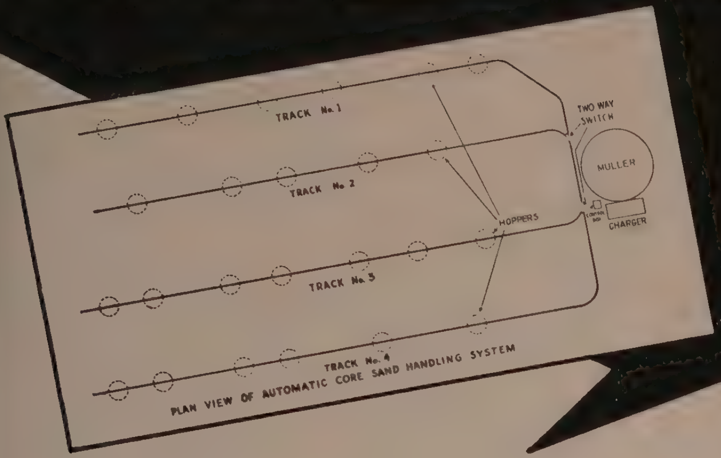
About 200 tariff classification are affected by the White Hous list, about a dozen of which relat to major basic steel items, an these are concerned mostly wit one nation—Sweden. However, several hundred items concern products fabricated wholly or in par from steel.

Included in the list of Swedis imports on which it is suggested th duty be modified are ingots, blooms slabs, sheets, plates, wire rods an bars, wire as such, various forging and castings, and tubes.

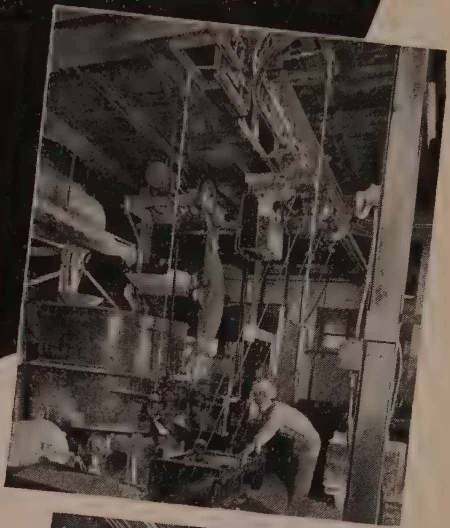
Included in the fabricated good are dozens of hardware items in

Automatic Dispatch System

delivers 25 tons of core sand per day!


TRACK No. 1
TWO WAY SWITCH
MULLER
TRACK No. 2
HOPPERS
CONTROL BOX
CHARGER
TRACK No. 3
TRACK No. 4

PLAN VIEW OF AUTOMATIC CORE SAND HANDLING SYSTEM



This compact system requires only two men to keep 24 core benches supplied with fresh core sand. Charger receives sand from underground conveyor. Sand is loaded and automatically dispatched and dumped to any one of 24 stations, on four tracks, by push button control. Track switches are manually operated. Each track can be increased to 16 stations or 64 in all. This is another of the hundreds of American MonoRail installations that have cut handling costs. Let an American MonoRail engineer show you how it can be done in your business.

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AMERICAN
MONORAIL COMPANY

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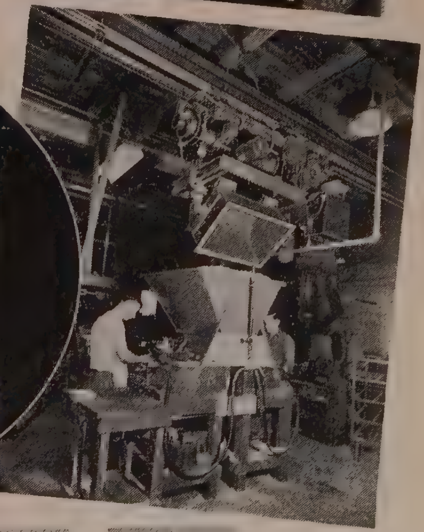

HE AMERICAN MONORAIL COMPANY

13103 ATHENS AVENUE
CLEVELAND 7, OHIO

cluding cutlery, hand tools such as pliers, files, scythes, planes, chisels, etc. Also on the negotiating list are a number of machinery items such as candy making, paper making and food grinding or cutting equipment.

In order to save time for both industry and government, it has been arranged that those who wish to appear for or against tariff changes need do so only once. Information, confidential or otherwise, submitted to the Tariff Commission will automatically be made available to the State Dept. Committee for Reciprocity Information—eliminating necessity for a second appearance.

American Industry May Utilize Crafts of DP's

Washington

• • • **American industry** might do well to check into the availability of skilled displaced persons now eligible for entry into the United States. Several shiploads of DP's have already reached this country under the provisions of the law enacted by the 80th Congress.

Available data indicate that there are large numbers of DP's skilled in the metal trades. Included in this category are electroplaters, foundrymen, forgemen, heat treaters, machine operators, machinists, metalsmiths, millwrights, welders and tool makers.

An indication of what might be done comes from the mining industry. This industry has been given assurances by the Displaced Persons Act Commission that the bringing in of miners will be recognized under the regulations now in preparation. It is not yet clear as to the number of miners that may be brought in, but the Commission has stated that it will be necessary for anyone employing them to provide transportation from the U. S. port of debarkation to the mining communities.

Mining companies needing men are advised to communicate with the Displaced Persons Act Commission, Department of State, Washington 25, D. C., stating the number of men they can put to work and furnish with living quarters.

The same advice is applicable to anyone in industry who feels that he might be able to find skilled workers among the ranks of the displaced persons.

THE BULL OF THE WOODS BY J. R. WILLIAMS

TRY OUR THEME SONG AGAIN-- WE OIL--CLICK, CLICK, TH' CAN-- WE CHIP--TAP, TAP, TH' HAMMER-- WE FILE--ZIP, ZIP, THE FILE--
THEM NUTS IS GOIN' TO TRY FOR TH' RADIO, TO ADVERTISE METAL STUFF-- AS IF PEOPLE DON'T GET WORK ENOUGH WITHOUT LISTENIN' TO IT!
IT SOUNDS LIKE THEY ARE BUILDIN' A LOCOMOTIVE OR A HUNDRED-TON CRANE,' AN' I DON'T THINK MANY PEOPLE BUY THEM!
11-19
J.R.WILLIAMS
THE SHORT SHIFT

COPR. 1948 BY NEA SERVICE, INC. T. M. REG. U. S. PAT. OFF.

70,000 Tons of Lead Sought for Stockpi

Washington

• • • **Buying of 70,000 tons of le**
for the national stockpile (l
tonnages already contracted f
during fourth quarter 1948) f
delivery before next June 30 c
be better accomplished throu
individual deals with produce
than by attempting a volunta
allocation program.

This is the majority opinion
sulting from a second meeting
primary producers and importe
with Commerce Dept., Munitio
Board, and other government o
cials last week.

Industry representatives ha
pledged full cooperation with t
Federal Bureau of Supply in se
ing that the above tonnage is o
tained for the stockpile. Simil
action has already been taken
the copper and zinc industry.

In addition to representativ
of the Economic Cooperation A
ministration, National Securi
Resources Board, Treasury De
and Bureau of Mines attendi
the meeting were the followi
representatives of industry:

R. E. Dwyer of Anaconda Co
per Mining Co.; Ray M. Evan
National Lead Co.; E. N. Hickma
American Metal Co. Ltd.; Sim
D. Strauss, American Smelting
Refining Co.; Felix Wormser, S
Joseph Lead Co.; Neil R. Taylo
S. S. Smelting, Refining & Mini
Co.; Martin Wehncke, Brande
Goldschmidt & Co.; Frank Ca
berry, Metal Traders, Inc.; S. U
man, Philipp Bros. Inc.; an
Henry B. Van Sinderen, of
Tennant Sons & Co.

Wire-Making Machines To Become Standby Capacit

Washington

• • • **Some 400** wire-making m
chines, reclaimed from the Wa
Assets Administration under th
JANMAT program, have bee
stored by the Army in Signal Corp
depots.

They are largely comprised o
stranding and twinning machine
representing roughly nearly fou
times as many such machines a
existed prior to the outbreak o
war in 1941. However, the numbe
in storage accounts for no mor
than 40 pct of the total in use a
wartime peak.

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5009

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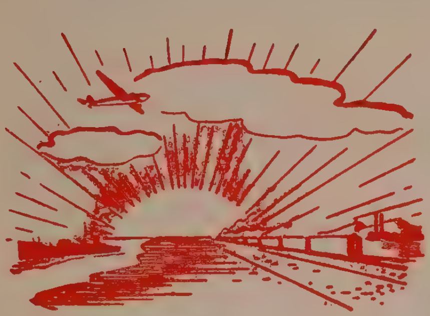
HEADQUARTERS

West Coast . . .

ROBERT T. REINHARDT

• High quality Eagle Mountain ore begins to flow to Kaiser furnace at Fontana . . . Immediately saves 35¢ a ton on freight alone . . . Cost of coking coal still high.



LOS ANGELES—Bald Eagle Mountain about 200 miles due east of here in Riverside County is doomed to get balder from now on as Kaiser Co. Inc. continues to blow off its top at the rate of 20,000 tons per blast to bring out the rich deposits of iron ore for its blast furnace at Fontana.

Last week mining operations began in earnest with the first train load of approximately 1600 long tons, 53 pct iron content ore leaving the mine on the recently completed, 52 mile long railroad, to Ferrum on the Salton Sea where it was picked up by the Southern Pacific and carried on to Fontana, approximately 162 miles from the mine.

This Eagle Mountain ore body has long been in litigation and only early this year Kaiser Co. secured a clear title to the mineral rights on the 2700 acres by payment of $1,132,811 to Edward T. Foley, Pasadena capitalist and Harlan J. Bradt, mining engineer who at one time controlled all mineral rights on the property. Mr. Bradt had originally acquired from the Southern Pacific Land Co. in 1940 a contract to lease and purchase the Iron Chief mine (as it is sometimes called) for $1,500,000. Kaiser interests had purchased the property itself from the Southern Pacific for approximately $1 million. Including the cost of the railroad, improvements and mining equipment it is estimated that this ore deposit has cost the Kaiser Co. approximately $6 million.

Richness of the ore and abundance of reserve on this property have only partially been approved. According to Kenneth Powell, superintendent of raw materials for Kaiser Co. Inc., there are approximately 26 million tons of high grade ore already proved in two separate deposits and an estimated 40 million tons of good quality ore still unproved. The division of mines of the State of California reports that there are about 43 million long tons of ore containing 30 pct or more of iron estimated to be present in the Eagle Mountain area. This report further states that 28 million tons contain more than 30 pct of iron in sample bodies and can be "said to be measurable ore; the rest amounting to 15 million tons is inferred or in bodies of various sizes and degrees of acceptability."

Assuming that there are approximately 60 million tons of recoverable and useful ore in the mine, the cost per ton in the ground therefore would be about 10¢.

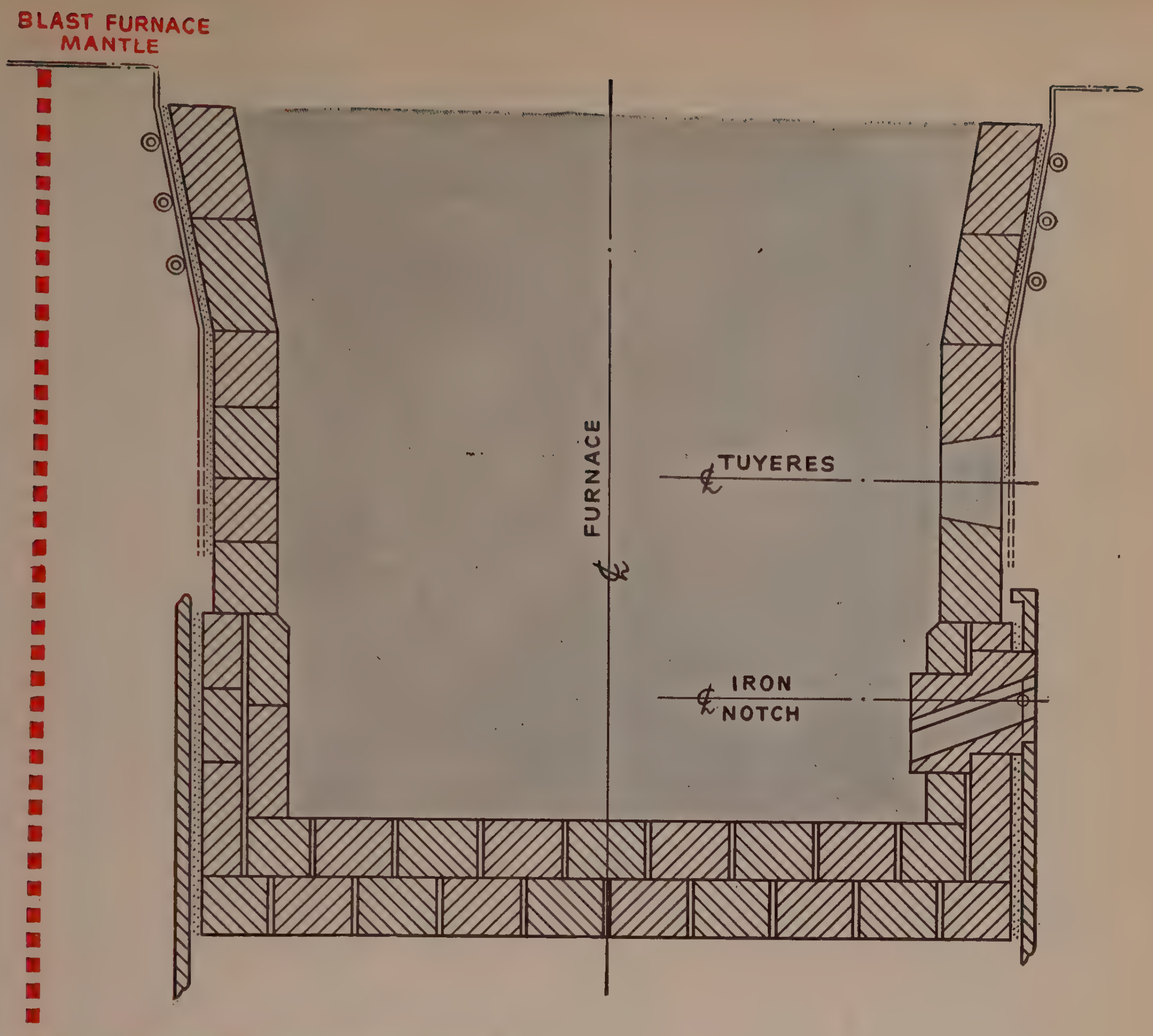
Iron content is high throughout this deposit and sulfur content is at a reasonably low figure which will make it necessary to sinter only about 35 pct of the material, whereas the ore formerly obtained from the Vulcan mine near Kelso, Calif. had a higher sulphur content and was in large measure a fine material which made it necessary to sinter approximately 50 pct. Eagle Mountain ore is both hematite and magnetite and is classed as a coarse, hard ore.

TEST runs made on Eagle Mountain ore in the middle of last year resulted in very optimistic reports from the blast furnace at Fontana. During that 17-day test run the burden in the furnace consisted of 78.4 pct of Eagle Mountain ore and with coke consumption of 1451 lb per ton of iron average daily production of iron was 1233 net tons in a furnace which has a rated capacity of 1200 net tons per day. The ore used during that test ran 53.91 pct Fe and .293 pct sulfur. Some of the ore in the test run was sintered.

Kaiser officials have estimated that the Eagle Mountain deposit should last for approximately 40 years at the present rate of consumption, although there are some who believe there is a sufficient amount of ore present in the deposit which, with beneficiation would carry operations through an additional 30 years. These figures of course are predicated on the operation of only one blast furnace, and on completion of the second 1200 ton stack which was recently announced, these figures would have to be cut in half.

Vulcan mine which formerly supplied the requirements of the Fontana blast furnace, has been inoperative since last year and the furnace has been fed from a Vulcan stock pile and from iron ore purchased from Utah. It is now planned that approximately 30,000 tons of ore will be taken from the Vulcan stockpile, the same amount purchased from the Utah mine and about the same drawn from the new Eagle operation. At capacity, Eagle Mountain mine will produce approximately 3500 tons per day, but this figure will probably not be reached for the next 4 or 5 months. Daily requirements at the blast furnace are now approximately 2200 tons of ore and about 840 tons of coke.

Operators of the Fontana blast furnace are proud of this low ratio of 1400 lb of coke per ton of iron which they have been able to maintain for sometime. Incidentally, the blast furnace which was shut down on July 25 was put back into operation Oct. 1 and is now reported as producing iron at rated capacity and its operators are confident that



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2. "National" carbon blocks are easy to install. One carbon block takes the place of from 50 to 1000 nine-inch firebrick, depending on the size of the block. This means fewer joints, sounder joints, faster installation, and lower cost.

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production will soon be increased to more than 1300 tons of iron per day.

While Kaiser officials are reluctant to state just what the delivered cost of the Eagle Mountain ore at the Fontana blast furnace will be, they do state they are confident they will have the lowest delivered cost of iron ore of any plant in the country. Mr. Powell went so far as to say that in his estimation the delivered cost will be "something less than half that of Lake Superior ores delivered at Lower Lake ports." There will be an immediate saving of 35¢ per gross ton in freight alone as against present hauling costs from the Vulcan mine. (THE IRON AGE, Sept. 16, 1948, p. 108).

WITH the relatively low percentage of over-burden to contend with, open pit or strip mining operations can be handled economically following dislodgement and breakage of the ore by blasting. Diesel powered shovels of 5 ton capacity, load the ore into dump trucks which transport it to crushers and screens from which the ore is automatically loaded into a stockpile. Ore is loaded into rail cars from a pit in the bottom of the stockpile at the rate of approximately 1200 tons per hour by means of a conveyer belt. Normally approximately 60-ton capacity cars are loaded at the rate of one every 5 min. A stockpile of approximately 44,000 tons will be maintained at the loading site.

With the opening of this new mine and the recent announcement to the effect that Kaiser Co. intends to construct a new blast furnace there has been some conjecture as to the possibility of locating this new stack at, or near, Eagle Mountain. While such a project in the middle of a barren desert would present several problems in logistics, Mr. Kaiser has never been noted for allowing apparent obstacles to prevent his carrying out a development which may ultimately prove extremely efficient. As the operation now stands the ore cars return from the trip to Fontana as empties and might well carry coke or even coal to a furnace located near the mine.

There is no doubt that use of Eagle Mountain ore will considerably reduce iron cost at the Fontana furnace materially, but the company still must pay a high price for its coking coal which comes from Utah at a rail cost alone of $5.09 per ton. While the company has not released its actual cost figures on the coal at its Utah source, it is believed to be in the neighborhood of $4.00 per ton which would make the cost well over $9.00 at the furnace. However, even with the lower quality and higher cost of Vulcan ore Kaiser officials contended that their costs for producing iron were well in line with the national average and $17.00 per ton was frequently quoted as being the actual figure.

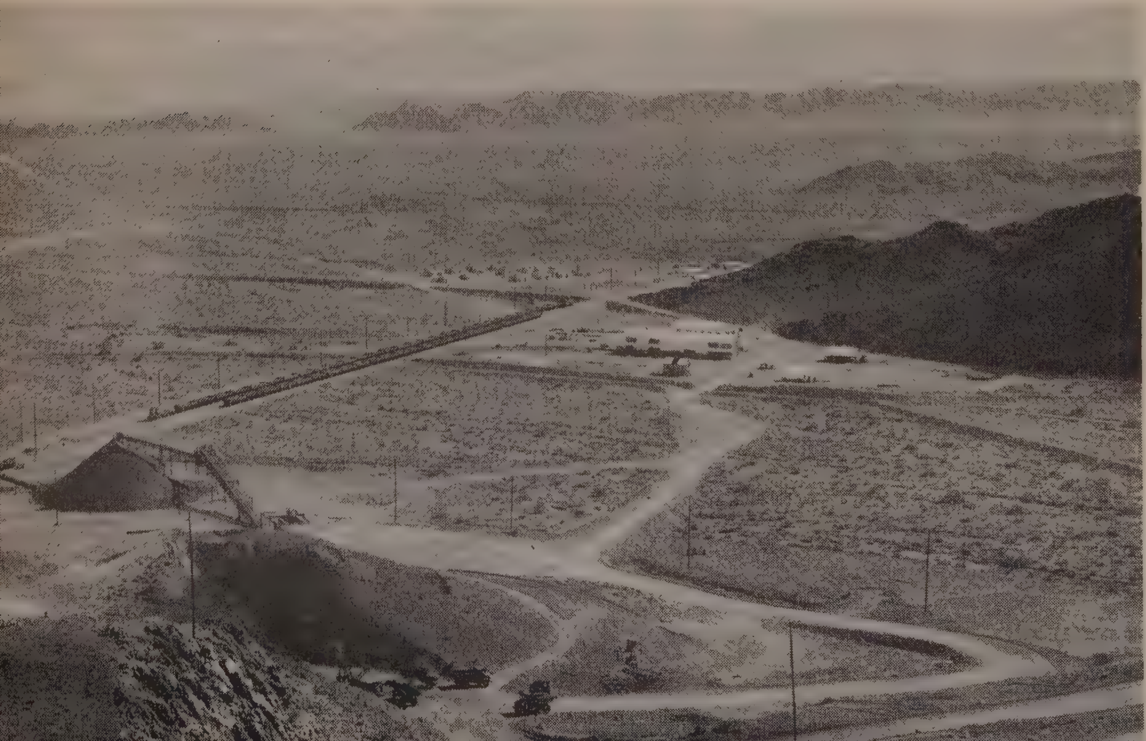
California Ore Reserves About 122 Million Ton

San Francisco

• • • **More than 100 iron deposi** are located in 31 of California 58 counties according to Bullet 129, "Iron Resources of Cal fornia" which was prepared und the direction of Olaf P. Jenkin chief of the California Divisio of Mines and just recently r leased.

According to this comprehe sive report the future productio of iron from California source will come from 13 principal local ties described in the surve Reserves of commercial ore i California were estimated at a proximately 122,658,000 long to and exceed the estimates of r serves of any of the other 1 western states, comprising abou 30 pct of the reserves of that are and 2½ pct of the national tota

Among other data is included thorough analysis of the recentl opened Eagle Mountain min owned and operated by Kaise Co. Inc., which among other dat includes the following as applic able to the iron ore reserves o the east end of the Eagle Mour tain district: 2.2 million long ton of 30 pct or less Fe ore; 2.7 mi lion long tons of 30 to 40 pct Fe 10.2 million long tons of 40 to 5 pct Fe; and 15.1 million long ton over 60 pct Fe. The total reserv for this area is reported as 4 million long tons.



EAGLE MOUNTAIN FEEDS ITS BROOD: *Trucks roll down serpentine paths carrying iron ore to be crushed and belt-conveyed to the stockpile, left center. The ore train on the siding awaits loading for shipment to the Kaiser plant at Fontana. Operational buildings and miners' model community are clustered in the background.*

If you pride yourself on Quality Control you know why we stress uniformity

IF your production enjoys the advantages of Quality Control, your assemblers need the assurance of uniformity in the screws they drive. Modern assembly techniques don't allow workers time to fumble for the *right* fastener -- they've *got* to get a good one everytime.

How uniform can a screw be? If you had the opportunity to see Corbin's own quality control in action, you'd realize that perfection is not far off in this screw plant. Machines in top condition; trained inspectors giving each lot a final going-over; laboratory testing of run-of-the-mill samples.

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machine screws

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tapping screws

CORBIN NUTS

machine screw nuts

PERSONALS

○ ○ ○

M. A. KING, engineering vice-president, Jeannette Div., Elliott Co.

• **M. A. King,** formerly manager of engineering, Elliott Co., Jeannette, Pa., has rejoined the company as engineering vice-president of the Jeannette Div. Mr. King, who had previously been with Elliott for 27 years, served as executive engineer for the turbine division of Worthington Pump & Machinery Corp. for the past 5 years.

• **Lewis W. Roe,** statistical supervisor, has been appointed assistant comptroller in charge of costs and statistics for Columbia Steel Co., San Francisco. **Robert B. Freeman** has been named chief metallurgist for the company, succeeding **Gordon L. von Planck,** who has been made metallurgical consultant. Dr. Freeman joined Columbia in 1936 as a metallurgist at the Torrance Works. **Thomas E. Caldwell** succeeds Dr. Freeman as works metallurgist at Pittsburgh. **H. Edward Doleman** has been named assistant to Mr. Caldwell.

• **H. H. Gnuse, Jr.,** has been named a vice-president in charge of engineering for the Nantahala Power & Light Co., Franklin, N. C., an Aluminum Co. of America subsidiary. Mr. Gnuse joined the company in 1940 and in 1942 was made electrical engineer in charge of operations and maintenance of the company's generating, transmission and distribution systems. More recently he has been chief electrical engineer for the power subsidiary.

• **William J. McGraw,** manager of electric tool sales in the New York territory, has been appointed manager of the Cleveland branch of Independent Pneumatic Tool Co., Aurora, Ill. **E. B. Rosell,** electric tool service engineer in the Chicago branch territory, succeeds Mr. McGraw as manager in the New York territory.

• **George C. McClure** has been named executive vice-president in charge of operations, Hercules Steel Products Corp., Galion, Ohio. **Fred Biszantz** has been appointed vice-president and advisory engineer in charge of research and development and **Alfred Dangler, Jr.** vice-president in charge of operations at Star Mfg. Co., St. Louis.

• **R. R. Griner** has been appointed western sales agent for the Electric Furnace Co., Salem, Ohio. Mr. Griner, who until recently has been the furnace engineer for Wright Aeronautical Corp., Paterson, N. J., was formerly an erection and service engineer with the Electric Furnace Co.

• **Carroll Edgar** has been made representative in the Seattle area for Kennametal, Inc., Latrobe, Pa. **William L. Chambers,** Kennametal application engineer, has been transferred from the Midwestern District to the Pittsburgh District office. **John D. Cook** has been appointed application engineer in the Midwestern district, working out of the Chicago office of the company.

• **Orville F. Figley** has been appointed manager of the Chicago district of U. S. Steel Supply Co., Chicago. **Frederick L. Bruckner** and **Arthur W. Johnson** have been appointed assistant district manager and **Howard Heiser,** office manager.

• **P. B. Goodale** has been named manager of the newly-formed Farm Equipment Section of Worthington Pump & Machinery Corp., at Holyoke, Mass.

• **Gilbert Thiessen** has been appointed technical adviser for the chemical division, Koppers Co. Inc., Pittsburgh. Dr. Thiessen had formerly served as development manager.

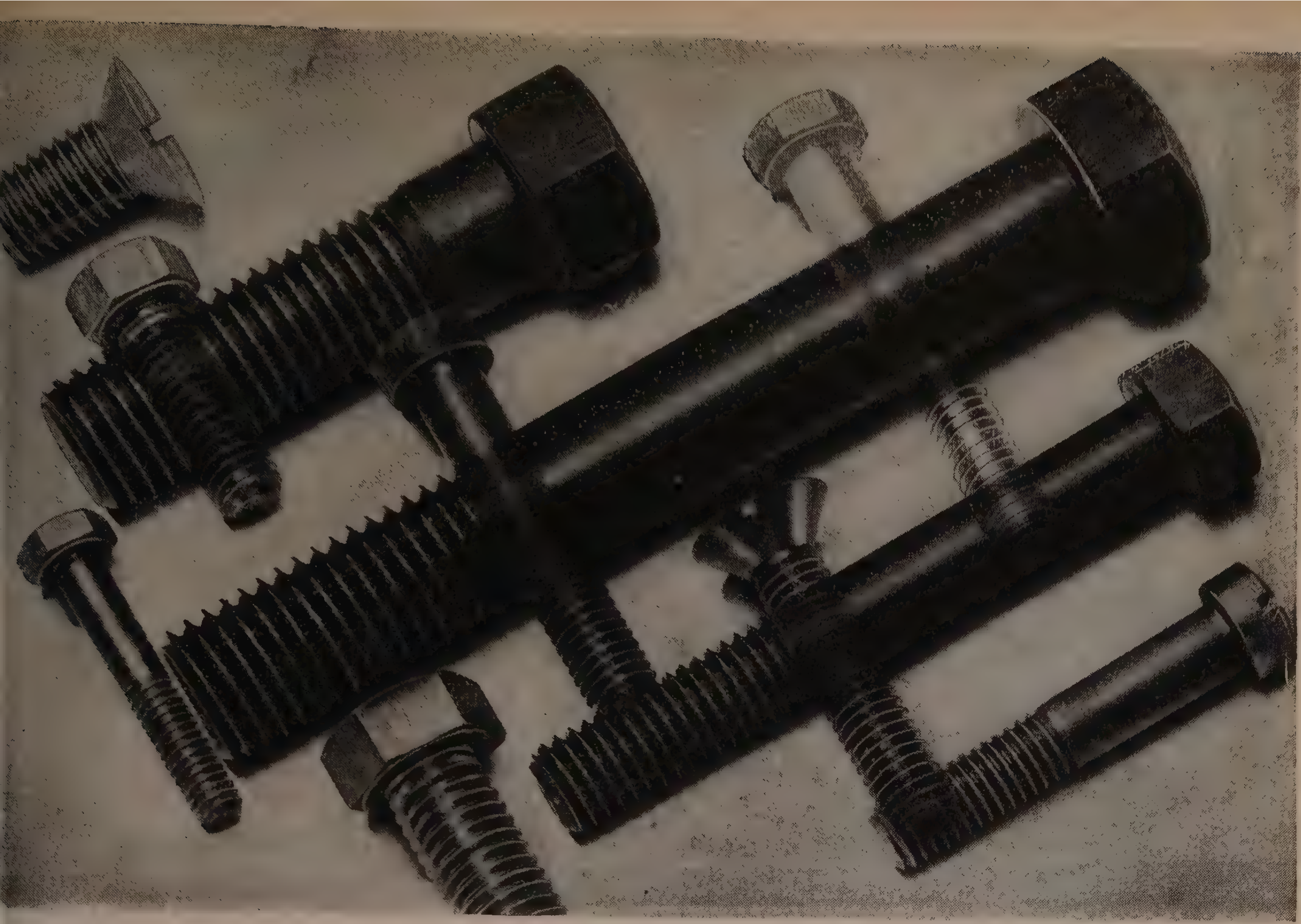
E. J. FULLAM, chairman of th board, Fellows Gear Shaper Co.

• **E. J. Fullam** has resigned a president of the Fellows Gea Shaper Co., Springfield, Vt., an has been elected chairman of th board. **E. W. Miller** succeeds M Fullam as president. **R. M. Fe lows** has been named first vic president and treasurer; **C. M Peter,** vice-president and genera manager and **H. T. Gates,** vic president and factory manager.

• **James R. Longwell,** for the pas four years director of engineerin and research, Carboloy Co., Inc Detroit, has been named assistan to the president, and **F. C. Ritne** has been appointed vice-presiden in charge of engineering and re search. Mr. Ritner joined the com pany in 1929.

• **James M. Herring** has bee named service manager, the Os good Co., Marion, Ohio. Mr. Her ring has been with Osgood sinc 1928, serving as motor mechanic electrician and assemblyman. I 1937 he became an operator-erec tor.

• **Daniel F. Hulgrave** has bee named director of the purchasin and salvage section of the Pro curement and Schedules Staff o General Motors Corp., Detroit succeeding **H. L. Dingler,** who ha been assigned to other duties Mr. Hulgrave has been associated with the Cadillac Div. of GM since 1908 and has been manage of purchases since 1912. He i succeeded in the latter capacit by **Raymond A. Vogel.**



IT'S "t.f.e."

TO FASTEN QUALITY WITH QUALITY

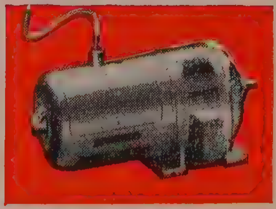
urpose of a fastener is to fasten. So he cheapest fastener is the one that astens *best,* with minimum time for ssembly, maximum holding power er dollar, and the ultimate contriution to the finished product's apearance.

Manufacturers of machinery and quipment have learned that specing RB&W Cap Screws saves oney all along the line. RB&W's vestments in spheroidizing furnaces improve structure of high carbon nd alloy steels . . . mills to draw its wn wire to closest tolerances . . . tmospheric-controlled furnaces for ientific heat treatment . . . are as portant as the modern production achines in contributing to *True* astener *Economy.*

On *any* problem involving bolts, uts, screws, rivets or specials, B&W engineers will help you attain rue *Fastener Economy.*

DESIGNING FOR T.F.E. Correct use of RB&W Cap Screws often permits reduction in number and size of holes, saving time and increasing strength of assembly.

CAP SCREWS FOR SEVERE SERVICE. Uniformly high strength, maximum toughness and adherence to close tolerances equip RB&W Cap Screws for severe stress conditions.



SUPERIOR APPEARANCE. The superior finish of RB&W Cap Screws enhances the appearance of the assembly and contributes to the sales value of the final product.

t.f.e.

TRUE FASTENER ECONOMY
IS THE LOWEST TOTAL OF ALL
FASTENING COSTS

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BOLTS · NUTS · SCREWS · RIVETS
RB&W
& ALLIED FASTENING PRODUCTS

Plants at: Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at: Philadelphia, Detroit, Chicago, Chattanooga, Oakland, Portland, Seattle. Distributors from coast to coast.

103 Years Making Strong the Things That Make America Strong

• **Reber C. Stupp,** formerly production chief of Jack & Heintz Precision Industries, Inc., has been appointed manager of the Cleveland plant of the Oliver Corp., succeeding **Robert H. Buckner** who has resigned to become a vice-president of Hupp Car Corp., Detroit.

• **Reginald G. Ullman** has been appointed sales manager, West Steel Casting Co., Cleveland. Mr. Ullman joined West Steel in 1946, following five years with American Car & Foundry Co. in the Cleveland and Pittsburgh sales offices.

• **Frank F. Bonnevier** has been appointed plant superintendent of the Buffalo Stainless Casting Corp., Buffalo. Mr. Bonnevier had formerly been associated with Frederick B. Stevens Co., Detroit, the Cooper Alloy Co., Hillside, N. J. and Allegheny Ludlum Steel Corp., Buffalo.

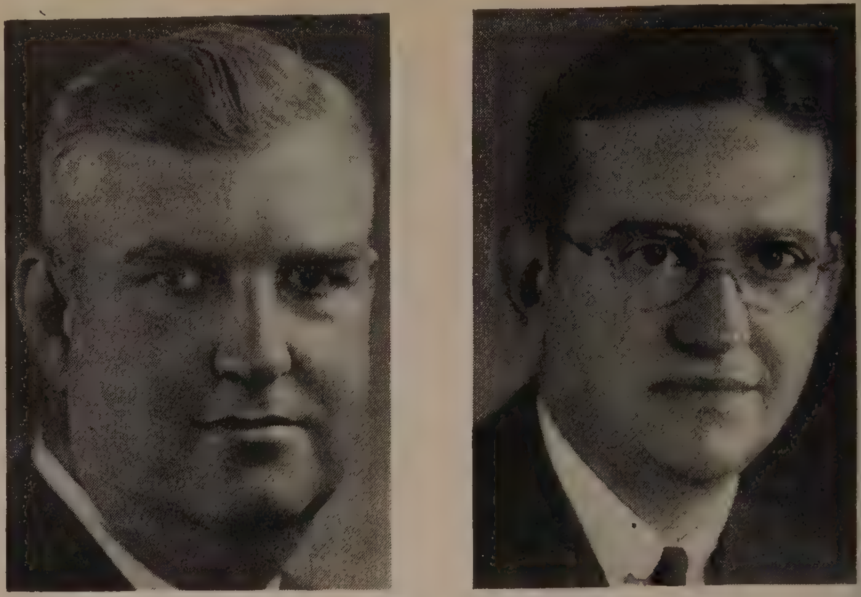
• **Harry P. Croft** has been named vice-president in charge of development, Wheeling Bronze Casting Co., Wheeling, W. Va. Dr. Croft had formerly been associated with Chase Brass & Copper Co., Inc., as director of technical control and research of the Midwestern Div.

• **Edward C. Nissen** has been appointed special representative for the Cleco Div., Reed Roller Bit Co., Houston. Mr. Nissen is located in San Francisco.

• **A. W. Landel** who has been associated with Connors Steel Co., Birmingham, for the past 15 years, has been appointed manager, construction materials, succeeding **John L. Callaway,** who has resigned to enter his own business as a steel fabricator in Knoxville, Tenn.

• **Stanford P. Bruce** has joined Wheel Trueing Tool Co., Detroit, in charge of the Diamond-Miser Div.

• **E. H. Steger** has been placed in charge of the new Textile Industrial Zone, Sherwin-Williams Co., with headquarters in Charlotte, N. C. **D. S. Shimp** heads the Southeastern Industrial Zone, with headquarters in Atlanta and **J. R. Stevenson** manages the Gulf Industrial Zone at Dallas.



H. W. JOHNSON (left), vice-president in charge of steel manufacturing and P. D. BLOCK, JR. (right), vice-president in charge of raw materials, Inland Steel Co.

• **H. W. Johnson** has been named vice-president in charge of steel manufacturing and **P. D. Block, Jr.,** vice-president in charge of raw materials, Inland Steel Co., Chicago. Mr. Johnson formerly served as staff assistant to the president and Mr. Block had been assistant vice-president.

• **Frank C. Gerhart** has been appointed advertising manager of American Type Founders Sales Corp., Elizabeth, N. J., filling a vacancy created by the death of **Robert B. Huddleston.** Mr. Gerhart had formerly been connected with Champion Paper & Fibre Co., Hamilton, Ohio.

• **Paul E. Butzin** has been named director of engineering, Delta Mfg. Div., Rockwell Mfg. Co., Milwaukee. Mr. Butzin joined the Delta Div. in 1933. In 1942 he joined Milwaukee Gear Co., where he late became works manager.

• **James M. Hackney** has been appointed general manager of the newly-formed dealer sales division of Remington Rand, Inc., New York. **George W. Fotis,** has been named general sales manager of the new division. Mr. Hackney formerly served as general sales manager of the portable typewriter division and Mr. Fotis, director of sales promotion for the typewriter division.

• **Robert E. Seiffert** and **William E. Hendricks** have been named to the board of directors of Belmont Iron Works, Philadelphia, to fill vacancies created by the death of **William C. Smith** and the resignation of **John S. Adelhelm.** Mr. Smith served as vice-president, director, chairman of the executive committee and member of the finance committee. Mr. Adelhelm has been vice-president, director, treasurer, chairman of the executive committee and finance committee. **Sigmund S. Albert** has been appointed chairman and **Harry A. Rowbotham** and **Harold Leonberger** have been appointed members of the executive committee. Mr. Seiffert has been named assistant chief engineer, succeeding **Harry H. Stahl,** who has been promoted to chief engineer. Mr. Stahl in turn succeeds **Joseph G. Shryock,** who is president of the company. Mr. Leonberger, Mr. Rowbotham and **Bennett T. Mial** have been named vice-presidents. Mr. Mial and **Albert W. Schede,** who has also been appointed treasurer, have been appointed to the finance committee. Mr. Hendricks has been named production manager. All appointments are effective Dec. 1.

• **Kenneth C. D. Hickman** has been named consultant to Eastman Kodak Co., Rochester, N. Y and Arthur D. Little, Inc., Cambridge, Mass.

MAN THUNFORS, vice-president nd general manager, Paul M. Wie- er Foundry Co.

yman Thunfors has been ap- nted vice-president and general iager of the Paul M. Wiener indry Co., Muskegon, Mich., ceeding **William G. Grant,** who tinues to serve the company ın advisory capacity. Mr. Thun- s had formerly been associated h Richmond Radiator Co., erpillar Tractor Co., Muskegon tern Shop and Lakey Foundry tern Shop.

harles P. Hammond has been ıed superintendent of mills of Rotary Electric Steel Co., De- t. He formerly served as erintendent of mills with Atlas els Ltd., Welland, Ontario, and or to that was connected with ted Alloy, and Crucible Steel of America.

rthur B. Morgan has been ap- nted field sales manager and **ier Z. Delp,** merchandising iager, New Holland Machine New Holland, Pa.

onald J. Lynn has been elected rector of General Fireproofing Youngstown, succeeding **ick M. Bell,** who died.

F. G. Morley has been ap- nted chairman of the board and **rles Haskill,** president and surer of Great Lakes Engi- ring Works, River Rouge, h.

• **Joe S. Thomas** has been appointed director of purchases and **Charles Beck,** has been named to the newly-created position of manager of raw materials supply, Armco Steel Corp., Middletown, Ohio. Mr. Thomas, who succeeds the late Newman Ebersole, joined Armco in 1927 and has served as assistant director of purchases since 1947. Mr. Beck joined Armco on a full time basis in 1926 and in 1944 was appointed assistant general superintendent of the Middletown Div., the position he held at the time of his new appointment.

• **Clarence C. Walker,** formerly commercial vice-president assigned to customer relations work in the New England area, General Electric Co., has been appointed general manager of the company's Construction Materials Dept., with headquarters in Bridgeport, Conn. Mr. Walker succeeds **Carrol D. Hepler,** who died. **W. J. Woods** has been named manager of the Buffalo office of the company's apparatus department succeeding **George Campbell,** who has retired after 41 years of service. Mr. Woods formerly had charge of the GE Industrial division office in Buffalo.

GEORGE C. DELP, vice-president, Sperry Corp.

• **J. T. Gillespie, Jr.** has been named sales manager, Watson-Stillman Co., Roselle, N. J. Mr. Gillespie joined the company in 1944 as director of export sales, in which capacity he remained until his appointment to the new post. As part of his new position he continues to supervise the company's export sales.

• **George C. Delp** has been elected a vice-president of the Sperry Corp., New York. Mr. Delp is president of the New Holland Machine Co., New Holland, Pa., a subsidiary of the Sperry Corp.

• **William C. Jordon** has been elected a director of Wright Aeronautical Corp., Wood-Ridge, N. J. engine-building division of the Curtiss-Wright Corp.

OBITUARY...

• **J. William Jay,** 63, advertising manager for Henry Disston & Sons, Inc., Philadelphia, died Oct. 29.

• **Maurice I. Bloch,** owner of Selma Foundry & Machine Co., Selma, Ala., died Nov. 5.

• **Henry T. DeBardeleben,** 74, chairman of the board DeBardeleben Coal Corp., Birmingham, died Nov. 2.

• **Frederick K. Weider,** president, Medina Iron & Brass Co., Medina, N. Y., and president of Barr & Creelman Plumbing Supply Co., Rochester, died Nov. 6.

• **Max Meltzer,** 54, vice-president and general manager, Steel Trading Corp., Pittsburgh, died Nov. 3.

• **M. L. Briggs,** former vice-president, Briggs Mfg. Co., Detroit, died Nov. 2.

• **Myrl L. Jacobs,** 63, vice president in charge of raw material properties of Bethlehem Steel Co., died Nov. 13 at the Pan-American Guest House, Trinidad, B.W.I. Graduate of Lehigh University in 1910 with a degree in mining engineering. Appointed vice president and elected to the board of directors of Bethlehem Steel Co. in 1940.

European Letter . . .

• Analysis shows the Chinese Communist fully orthodox . . . Reveals fanatical hostility to America and Western World . . . Corrupt Kuomintang rule and victorious march of communists hold China's destiny at stake.

LONDON—There have been signs for some time that the storm-center of world politics might shift from Europe to the Far East. In Europe, in spite of the continuing tension over Berlin, there has been a certain consolidation of positions on both sides, a transition in the cold war from a campaign of movement to a vigilant defense of fortified lines. It is only in China that at the present moment Communism is advancing victoriously by force of arms. The destiny of a country which holds a fifth of the world's population is at stake in a far-ranging civil war in which both America and Russia are involved, at least morally, as backers of the opposing sides. Britain is relatively uninvolved, having withdrawn from active concern with Chinese affairs ever since China was declared an American strategic sphere during the Pacific war. But no nation can remain unaffected by a threat to the peace of the world such as may at any time arise out of the Chinese civil war, and Britain has already felt its repercussions in the Communist revolt in Malaya, for this rising is almost entirely Chinese and has been partly a projection of the Chinese civil war into Malaya; many more non-Communist Chinese than Europeans have been killed by the rebels.

The situation which has existed in China since the fall of Mukden to the Communists cannot be merely an internal concern of China, nor in its international implications can it be confined to the interests of America and Russia. There would, indeed, be ample justification for bringing it before the United Nations — were there any ground at all for believing that the United Nations could do anything about it. But whether within the framework of the United Nations or outside it, the Western nations will have to do some hard thinking about China. Their concern with the Chinese crisis, it need hardly be added does not arise out of any assumption of right to supervise China's internal political or economic development or decide what China's national policy is to be. Nor is it primarily because of anxiety over the fate of foreign-owned properties in China; these are legitimate interests to be defended by diplomatic means, but they are not a ground for intervention in China's domestic politics. The reason for alarm at the military advances of the Chinese Communists lies in their fanatical hostility to America and the Western World and in the probability that a Communist China would be inseparably combined, like Poland or Czechslovakia, with Russia in an anti-Western bloc, thus bringing about a profoundly important alteration in the world balance of power and opening the way for fresh advances and excursions of militant Communism.

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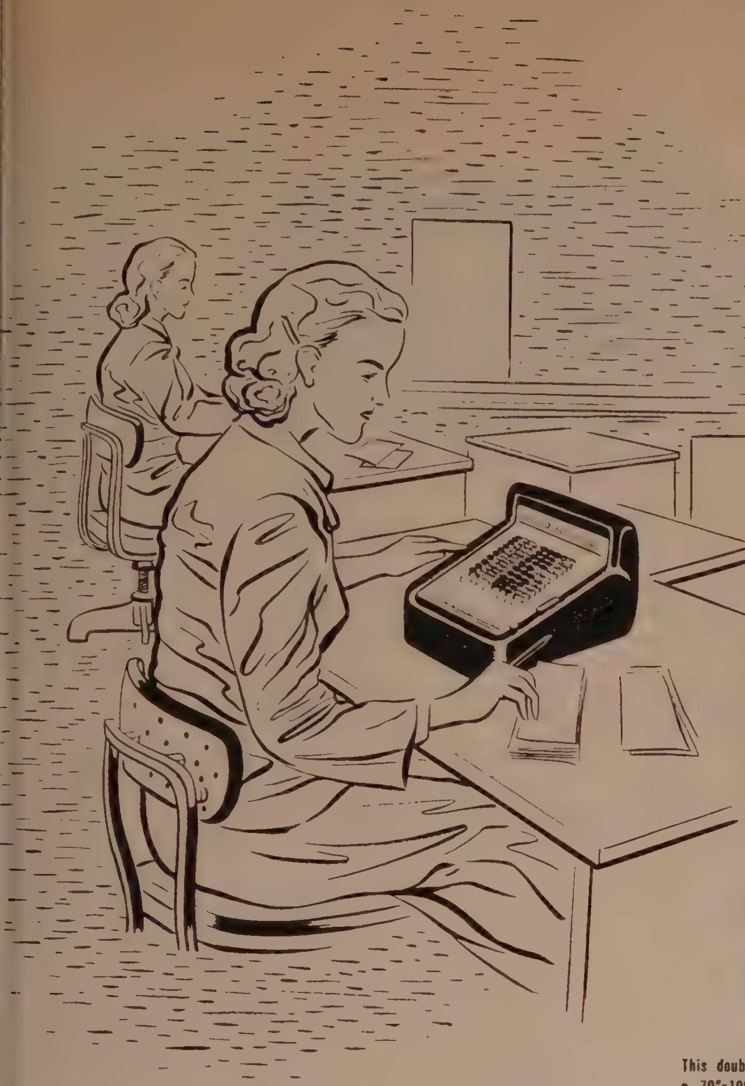
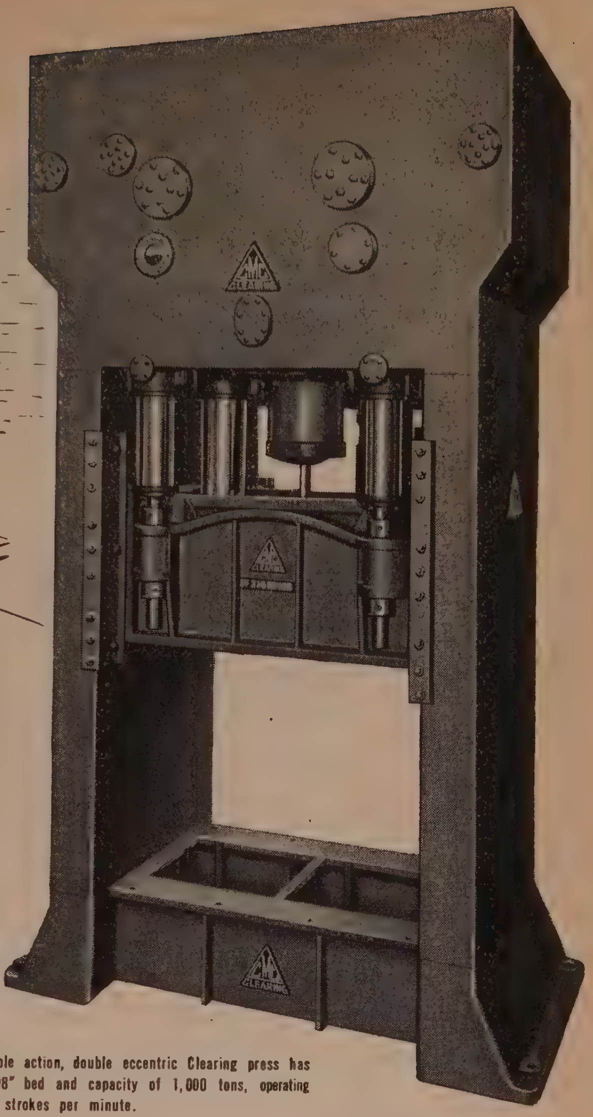
COMMUNISM, triumphant in China, would hardly be contained by China's borders. The wave would pass on into southeast Asia, where there are large Chinese communities in each country; it is significant that the Chinese Communists have followed the example of the Kuomintang in taking special measures for organizing the "Overseas Chinese," and they have the advantage of a doctrine which, unlike pure Chinese nationalism, can influence the native inhabitants while retaining
leadership in Chinese hands. Thu
not merely Manchuria or ev
North China, but the whole F
East from the Amur to Timor a
the Bay of Bengal is at stake
the struggle for the Chinese ca
tal which is now developing.

There has been much controver
about the Chinese Communists, t
character and aims of their mov
ment and their relation to the S
viet Union. There has been a gre
vogue for the view that the Ch
nese Communists are "not real
Communists," but merely radic
agrarian reformers with a Chine
version of the faith having litt
except the name in common wi
the Moscow brand. It has been i
ferred as a corollary of this inte
pretation that a Communist victo
in China would make little or
difference to China's foreign rel
tions and that the western natio
would be able to do business wi
the new regime simply on the b
sis of China's national interes
and need for foreign economic ai
Unfortunately this view hard
squares with a scrutiny of Chine
Communist propaganda for hor
consumption or with the writin
in which Chinese Communist lea
ers have expressed their attitude
world affairs.

There is nothing to show th
the Communists in China, a
more than elsewhere—at any ra
as far as their higher leadersh
is concerned—are merely practic
reformers, indifferent to Marxis
Leninist dogma; on the contrar
it is the fanaticism of belief in
revealed doctrine which, combin
with a supple tactical skill in t
manipulation of social forces, h
been the secret of their success. B
cause of the economic backwar
ness of China and the course
events which in 1927 drove the
from their original bases in t
coastal cities, the Communists
China have become more special
identified than in any other cou
try with peasant revolt; they ha
also gone very far in tempora
compromise with capitalism in o
der to win support among middl
class elements disgusted with t
corrupt rule of the Kuomintang.

BUT in their world outlook, a
therefore in their foreign p
icy, as and when control of it c
be obtained, the Chinese Comm





This double action, double eccentric Clearing press has a 70"x108" bed and capacity of 1,000 tons, operating at seven strokes per minute.

DAY of RECKONING

Year ending day, with balance sheets "as of," is just around the corner for most American business. But the real day of reckoning for December 31, 1948, was in many cases a long time ago.

Manufacturers who, in 1948, substituted press methods for slower, more costly ways of working metal can anticipate their figures for the approaching year with satisfaction and confidence. For press methods make most efficient use of man hours, reduce waste of material, make products more useful and with greater eye-appeal.

Now is the time to start thinking about your reckoning for 1949 and 1950. As an important step toward improving those coming statements, consult our engineers about the ways other manufacturers have reduced their costs with Clearing presses. It costs you nothing to ask.

CLEARING MACHINE CORPORATION
6499 West 65th Street • Chicago 38, Illinois

CLEARING THE WAY TO EFFICIENT MASS PRODUCTION

CMC CLEARING

nists are fully orthdox. They know from their Marxist-Leninist bible that imperialism is the final stage of capitalism; America is the strongest of the capitalist states and must therefore be planning the conquest of the world, including the subjection of China. All the denunciations of American imperialism and the instigators of war which pour from the radios of Moscow or Warsaw are echoed in Chinese Communist broadcasting with, if that is possible, even greater venom. If Britain figures less prominently than America among the infernal powers threatening the hard-won independence of the Chinese people, it is not because of any sympathy for the efforts of the British Labor Government to carry out a program rather more socialist than that put forward currently by the Communists for China, but because from a Chinese angle Britain and Europe are hardly in the picture at all.

It may be said that the rabid anti-Americanism of the Chinese Communists is due only to American support for President Chiang Kai-shek and that it would disappear if American policy were to abandon the Nanking regime. However, the Chinese Communist line on foreign policy did not start with the American aid given to the Chinese Government after the surrender of Japan; in 1940 the Communists in China were faithfully following the Moscow directives on the imperialist war which Britain was then waging against Hitler, and Mao Tse-tung's book "The New Democracy," which laid down the principles of Communist political strategy in China, made clear the fundamental alignment of the party on the side of the Soviet Union against all capitalist states. It is possible, indeed, that the Chinese Communists, if once in control of all China, might succumb to "Titoism" and forget their proper devotion to the highest authority of the brave new world; the size of China and the instinctive Chinese ethnic pride would make for insubordination. But western policy cannot safely be based on such a remote chance. It is impossible for the leaders of a state to hold definite *a priori* convictions about the inevitable imperialism of certain other states, and to instill such convictions into the whole people through a monopoly of propaganda, without their foreign policy becoming, in a large degree, the prisoner of these ideas.

IN these circumstances can there be any doubt that the western Powers, and above all the United States, have an overwhelming interest in sustaining any government which is friendly to the west and opposed to the absorption of China into the Russian orbit? It is not the virtues of Nanking that make support for it imperative. The western Powers have indeed no reason at all to be satisfied with the record of the government which today is attempting to stem the Communist advance. But the nature of the struggle leaves the western Powers no choice. In the circumstances which exist, support for the anti-Communist forces is legitimate and should be inevitable.

But even if the need to reinforce Nanking is admitted — which is far from the case in Washington where the "plague on both your houses" pronounced by General Marshall 18 months ago still checks the China firsters in Congress and the popular press—and even if the decision were taken to give the Nanking Government sufficient backing to maintain its position, the problem remains of finding some means of doing so. The issue is urgent. It is not a question of long-term support but of stopping the Communist flood within the next few weeks and checking the advance which today threatens the whole Yangtse Valley. Clearly, therefore, it is in this first instance a problem of military supplies and food for the threatened cities. But fundamentally it is a political initiative which is needed. It is manifestly impossible for any situation to be retrieved if the present Nanking regime continues unaltered. Its record of corruption and incompetence is such that it can no longer maintain popular leadership against the Communists. Moreover, it has failed in what is both in the immediate future and in the long run the crucial issue in China—the attitude of the peasant. Military resistance now and stability in the future depend upon agrarian reform. The total failure of the present Government at Nanking to recognize this necessity has ruled it out as a rallying point for Chinese resistance.

Is the situation, therefore, hopeless? Far from it. Upheavals in the Nanking Government may well come, of themselves, as a result
the military defeats of rece
months. But the Americans can a
celerate the process by maki
their aid conditional upon t
broadening of the Government
inclusion of some of the liber
statesmen who for the last
months have been seeking to bre
the limpet hold on the power
the Kuomintang Old Guard a
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to the regular forces but also
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relations between landlord a
tenant.

In the south and west of Chi
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have gained a foothold and whe
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and initiative were no long
cramped by the jealous obstructi
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found considerable enthusiasm f
the local self-defense organizati
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now come when the American Go
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against the Communists.

THE pledge of agrarian refor
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Communists' sweeping advanc
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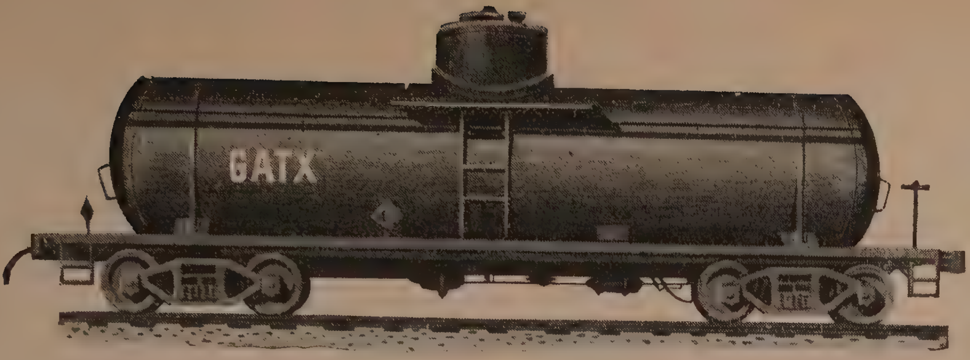

AN IMPORTANT MESSAGE TO ALL TANK CAR SHIPPERS PLANNING EXPANSION

The demand for tank cars is so great today that many shippers are not able to meet their present transportation requirements. General American is doing everything possible to relieve this situation by producing as many cars as our supply of materials will permit.

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Industrial News Summary...

- ***Steel Demand Stronger Than Ever***
- ***No Falling Off in Orders Seen***
- ***Forecasters Now Throw Up Hands***

STEEL demand is not yet ready to fall on its face. Far from it. It may be a long time before it even shows signs of a slowdown. Reports in the past few weeks of easing in steel requirements have been generated by people looking for only that. Such reports have appeared periodically since the end of the war.

The country is closer to a more "normal" flow of steel orders than it was 1, 2 or 3 years ago. But that is all that can be said at this time. There just hasn't been any falling off in total steel business since the election. There has been no change at all in the demand pattern.

If anything, Midwest steel users claim this week that steel is harder to get. How can this be when steel output is higher than it ever was? That's a good question but it is no answer. It may be that all along there has been a steady growth in normal steel demand. Maybe this has been superimposed on top of the so-called filling up of the pipelines.

A check by THE IRON AGE editors fails to find any change in the mood of steel-hungry customers in the East, the Midwest, in Detroit or at the byways and highways of the country. There has been no dropping of expansion programs in the steel industry. The flow of steel orders is wide, strong and appears never-ending. When there are a few holes in mill schedules they are quickly filled.

Forecasters who have tried to name the year, month, day and hour that steel supplies will catch up with steel demand have given up. All forecasts by men in steel and out have been shattered to pieces by the insistent demand for steel. Many of the predictions are now a year or more beyond their time. Some of those made earlier this year are overdue. In the past few months there have been no new ones.

THOSE who said that the Marshall Plan and other exports would continue to hold up steel demand have been only partly right. Everything has been done to see that as much steel as possible went to domestic users in this country. Exports have been less than had been expected—but home demand keeps going at top speed. What would have happened in this country had export steel been given a wide open green light is not hard to guess. Yet, with more steel being made and shipped now than ever before, gray markets flourish, conversion deals are increasing and the people who can't get steel think they are on starvation rations.

Instead of conversion deals (where ingots or semi-finished steel are bought from one source and converted into finished steel products by another) falling off they are picking up—in number and tonnage. Not only that. There is tough competition in conversio deals between the oil companies and automobile firms Since ingots lend themselves to products which can b used by either industry, the scrambling by both ha taken on a new tempo.

News from the Midwest and Southwest indicate that oil firms are far from satisfied with the amoun of steel they are getting—from mills, from conversion or from gray markets. They want more. Man of their planned projects, such as pipeline and expansion programs, are tied up in the steel procuremen picture. It is costly to have these jobs retarded. Tha is why oil companies will pay the money necessary t go through the conversion route for more steel. I they don't do that they don't get the extra steel.

SIX months ago it was said that ingots would be a drug on the market. Those 6 months have passed Ingots are not now a drug on any market—if they are good quality and the right sizes for big conversion jobs. Prices for ingots in the free market are strong —so strong that spot prices range from $90 to $100 or more a ton. By the same token free market plates skelp and tube rounds for pipe in the conversion market command high prices—to which is added some fancy freight charges.

Steel base prices were still a quiet subject this week but another steel company (Republic Steel Corp.) has revised its extras on hot-rolled sheets and strip. The change may add about $6 to $7 a ton to the average price of those products. More companies are studying such extra cards. It would be no cause for surprise if more firms made changes on hot-rolled sheet and strip extras.

The increase of $6 a ton for rails made by Inland Steel may not turn out to be an isolated price increase. Some makers of rails have been squawking for months about the cost of making that product. They may consider raising rail quotations.

Chances are good that freight car steel allocations will continue through August of next year at least. October freight car output fell 1000 units below the 10,000 goal because of (1) labor trouble at one plant, (2) changeover to a new type of car at another plant and (3) cutbacks by at least four railroads on new car construction to concentrate on repair of old cars.

November freight car output is expected to come close to 10,000 units. It is not expected that much more than the 10,000-car goal will be reached in future months. A labor shortage bottleneck would be reached if output were to be boosted much higher than it is now.

Steel ingot output this week stays at 99.5 pct of capacity. Fluctuations around that figure may be expected, with no sharp drop for some time to come.

RAILS UP—Effective Nov. 15 Inland Steel Co. raised se prices on rails 100 lb and over 30¢ per 100 lb. The w base is $3.50. At the same time they revised upward e extras on joint bars and standard tee rail sections under 0 lb per linear yd. Weight extras on tee rails went from ½¢ to 15¢ per 100 lb on rails weighing 100 to 90 lb. On ils weighing from 90 to 75 lb the extra increased from ¢ to 30¢. Extras on special joint bar sections were ubled. Weight extras on joint bars were increased from to 80 pct, depending on the weight of the section. Wiled Sykes, president of Inland, said, "For several years e company has sold steel rails without profit. It is our lief that it is not proper for us to exhaust our raw mateals and wear out our facilities in producing these comodities without an adequate return for our stockholders."

A FREE RIDE—France is getting a free ride on West ermany's business band wagon. Britain and the United ates put up $1 million of working capital with which the int Export-Import Agency, JEIA, handles all foreign ade. Now the French have agreed to join the trade erger, but put up no cash. The other 2 countries feel at their zones will profit by bringing in France sans cash promoting the flow of goods wherever needed thereby creasing production.

FATTER PAYCHECKS—The iron and steel indusy's payroll hit a new monthly record of almost $200 illion in September, according to the American Iron and teel Institute. Earnings of hourly, piecework and tonage workers for this month averaged $1.718 per hr as mpared with $1.689 in August and $1.645 for July. The erage for the first half of 1948 was $1.562 per hr.

PITTSBURGH HO!—Briggs Manufacturing Co. is rnestly going after a spot in the Pittsburgh district. They ntemplate spending several million dollars in relocating they find the right place. But they come up with the al reason for relocation. Freight savings would be negliible compared with the cost of setting up a completely ew operation. But, the chief advantage would come from eadier steel supply that would permit effective and constent production planning with corresponding cost savings.

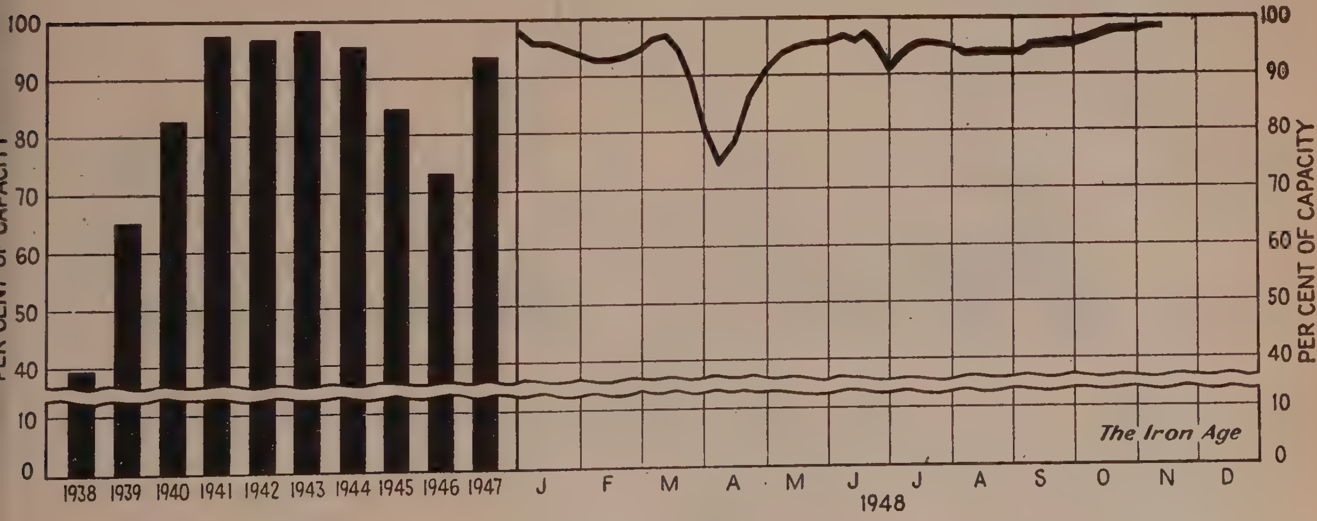
- **ALLOCATIONS CONFAB**—Secretary of Commerce Sawyer has asked the steel industry to come in and talk over the voluntary allocations program on Nov. 19. Purpose of the meeting is to discuss the several steel allocations programs on which action was postponed in October and to consider extending several nondefense steel allocations agreements now in effect beyond Feb. 28. The invitations went to members of the department's steel products advisory committee which decided on Oct. 6 not to meet again.

- **UNDER ONE WING**—U. S. Steel Supply Co., U. S. Steel Corp.'s warehousing subsidiary, will soon be serving steel to consumers in the Pacific northwest, according to L. B. Worthington, president of U. S. Steel Supply. It's merely a different way of performing the service since Columbia Steel Co., another U. S. Steel subsidiary, will turn over its warehouses at Portland and Seattle to U. S. Steel Supply.

- **DEAL STILL ON**—Negotiations for the sale of the Warren, Ohio plant of Copperweld Steel Co. to Borg-Warner Corp., Chicago, were pending at press time. It was believed that the delay was the result of problems involved in the separate lease which Borg-Warner Corp. is setting up with War Assets Administration, on the government-owned facilities at the plant. Announcement was originally scheduled for Monday. In Chicago a spokesman for Borg-Warner Corp. said, "As far as I know, the deal is still on," but declined further comment. Copperweld Steel Co. officials made no comment. [For details see THE IRON AGE, Nov. 11, p. 151.]

- **CHROME INDEPENDENCE**—A pilot plant to exploit large chrome ore deposits on the West Coast is expected to be in operation within about 30 days, according to Robert D. McCarter, executive vice-president of American Chrome and Magnesium Industries, Inc. Currently 3 plants for processing the ores are contemplated. Total cost will run about $3 million. The company expects to get about 300,000 tons of chromium metal annually from the plants by the middle of 1950. That would be roughly 30 pct of our present consumption and 20 pct of the world's needs.

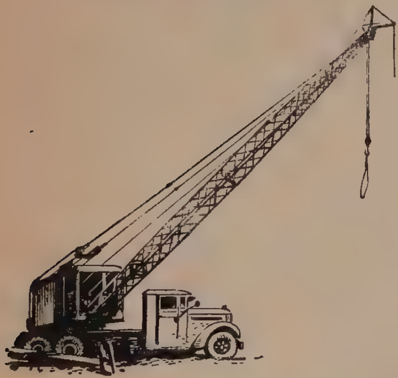
Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
. 9.........	99.5	99.0	93.0*	97.0	102.0*	105.0	98.0	102.0	98.0*	103.5	110.0	77.5	109.0	99.5
. 16.........	99.5	98.0	94.0	97.0	100.0	105.0	98.0	102.0	102.0	100.0	110.0	82.5	109.0	99.5

* Revised.

Strengthen Fabricated Structures
Reduce Bulk and Deadweight
Decrease Maintenance Expenses



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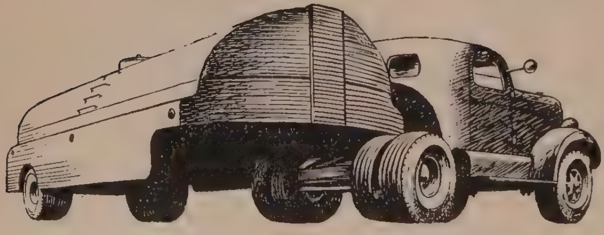

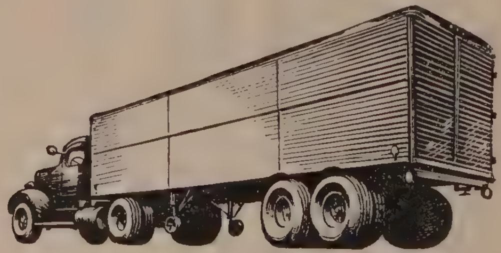

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THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET
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"Rugged is the Word for Steel" Say Harrassed Midwest Consumers

Supplies Are Tighter, Gray Market Is Stronger; But Consumers Find Way

° ° °

By D. I. BROWN
Chicago Regional Editor

° ° °

Chicago

• • • **Rugged is the** word for steel. Consumers in the Midwest don't see eye to eye on all the gruesome details but they agree, "steel supplies are tighter than they have ever been." They don't qualify this statement—right now it's worse than they can ever remember.

Mill quotas have been cut by all producers on practically all major products except stainless. Some manufacturers are laying off help in order to balance their working crews with available steel supply. Others are cutting the work day or work week instead of using outright terminations because they feel they must maintain their organization. Nobody is happy, producers included.

Foreign steel has become a factor. In fact the starvation steel diet has caused conversion to cross international boundaries. Sheet bar, plates, billets and bars from Belgium and France are being offered here. What's more, some people are buying them. This steel is foreign made. It's billed as Thomas steel which is their way of saying Bessemer. Because of the high phos these plates and sheets aren't any good for drawing applications. However, in slight forming and straight applications they will work.

The buyers and purchasing agents interviewed by THE IRON AGE are resourceful men. They don't give up easily. They know and use all the angles. So far they have somehow found a way. They didn't invent conversion but they perfected it. As a group they see no relief in sight. They expect the coming months to be even a worse dream.

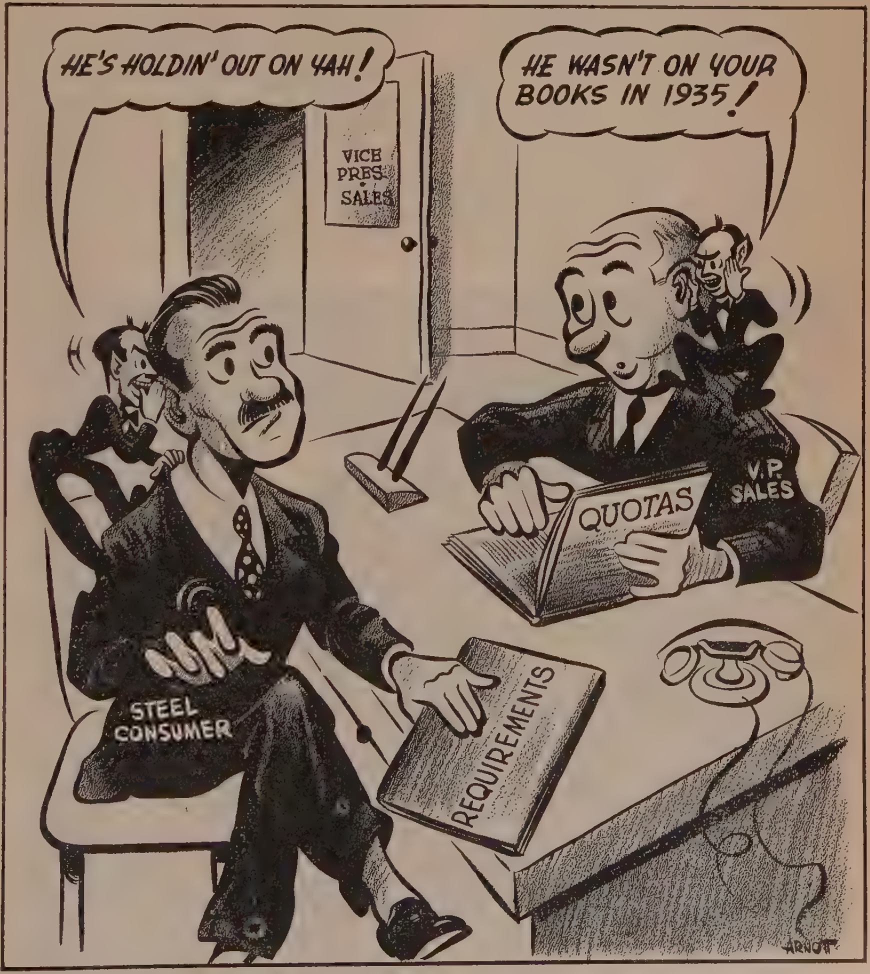
Narrowing profit margins are holding some consumers from going as far afield to get steel products as they did a year ago. Other companies will gladly take title to plates, sheets or pipe F.O.B. Stalingrad if need be. To this latter group the great hullabaloo over F.O.B. mill is premature and purely academic. They paid the freight before the Cement Case. They'll pay the freight now and "let's cross the bridge we are on before worrying about the one around the corner."

Pressure for conversion keeps climbing. Ingot and slab makers are on the average 1½ months behind on shipments. Gray market prices are higher. Gray market offers are fewer. Why? There are three reasons—take your pick: (1) The real opportunists have gone into the cement business where larger markups are possible. (2) They have firmly established their steel outlets and don't offer the same tonnage twice. (3) The brokers' main source of steel, the consumers, aren't willing to part with surplus unbalanced inventories at any price.

Product wise, pipe and plate are tightest. Consumers blame voluntary allocations for the plate shortage. One Chicago mill cut first quarter allotments on all products 20 pct. Plates were the exception. They cut this product 33 1/3 pct.

Mills admit the picture is so foggy they are afraid to promise anything. One Chicago mill only attempts to see one month ahead. Their customers are being given reduced quotas on a monthly basis. These same customers have been forced to tie the delivery of the finished product to mill ship-

Day in and Day Out!



ments. If you have the bars or billets forgers can generally give a one to two-week promise. If the forging company has to supply the steel, however, they will give you a "guesstimate," anywhere from 8 weeks to 6 months.

Some consumers can't understand why the industry can keep breaking production records and yet simultaneously reduce quotas.

Other users, the realists, are more understanding. This group regards a quota merely as a fishing license. Consumers fortunate enough to have qualified on the voluntary allocation plan are doing well. Those who haven't been so lucky are starting to holler for their cut.

Many users have been substituting aluminum for steel where possible. Flat rolled aluminum is just as hard to get as steel. Alcoa cut some customers 40 pct for the first quarter of next year.

One large maker of mechanical tubing cut first quarter allotments by 33 pct. Carbon bars are still tough. Not only hot rolled bars, but in recent weeks cold drawn bar deliveries have slowed up. Cold rolled sheets haven't suffered as much comparatively as have other products—but then they have been like hen's teeth all year.

Here's One Way

• • • On November 9 J. L. Block, vice-president of Inland Steel, wrote all customers telling them that if they found their quota tonnage for any given period exceeded the amount that was actually needed, Inland would like to know. Mr. Block promised that if a customer offered to cut back on deliveries for a month it would not affect the next month's quota. The consumers have been fearful that if they cancelled temporary unneeded tonnages the mills would assume that customer did not need as much steel as he had been getting and that the mills would automatically cut all future quotas by the same amount. Mr. Block's action is commendable. Many believe that if all consumers and mills played ball on this basis, the gray market would contract considerably.

Hot rolled sheets, 19 gage and lighter, consumers say, are now extinct. Heavy gage hot rolled isn't much better. Some users of strip declare direct mill shipments have dried up. This is particularly true of small consumers.

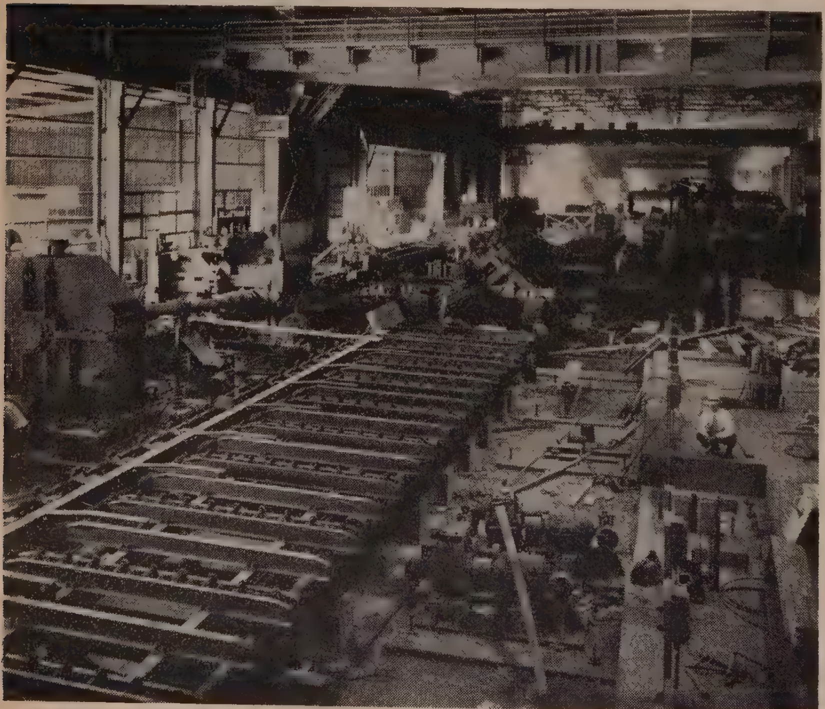
The mills are making less and less strip, they are driving for tonnage. They ship wide coils to the warehouses who slit and edge. This means a strip user is in many cases forced to buy these items from warehouses at a high price. This might not be so bad except the warehouses say they don't have any strip either.

Users who jumped into conversion early are in much better shape than those who couldn't afford it, lacked initiative, or were just short sighted. Auto makers are a case in point. To a great extent the oil and gas industry helped themselves in a similar fashion.

One large implement maker made the right arrangements early and is doing relatively well. Yet in these fields desperate cases are found. One ingenious user of seamless pipe got what he needed but he did it the hard way. He bought forging quality ingots, had them forged into rounds, the rounds were rough turned to size and cut into short lengths for piercing mill stock. The ingot maker, forge shop, seamless mill and end destination were all many miles apart—but he got his pipe. Costs? "Don't be silly, we need pipe!"

Where will it stop? None of the men interviewed would risk a guess. They don't know. No steel man knows and Gallup isn't in any shape to find out. One buyer of a large Milwaukee concern ventured this opinion: "The break will come fast, it will be drastic, it will come when least expected." On that basis it could well happen today. Better check, maybe it happened yesterday.

NEW TUBE PROCESS: *U. S. Steel is currently constructing a continuous pipe mill at the Lorain, Ohio plant of the National Tube Co. which will turn out seamless pipe at the rate of 2000 fpm. In conventional practice a solid round bar undergoes five separate operations in tube making. The new process combines most of these into one step.*



To Build New Type Barges

Pittsburgh

• • • **Integrated tank** barges of an entirely new design will be built here by Dravo Corp. for Mid-Continent Barge Line Co., Minneapolis, Minn., to transport petroleum products on the inland waterways.

It was said due to design and precision testing, the new hull form of this unit will have the lowest ton-mile resistance of any such fleet built by Dravo Corp.

Each of the two barges will be 240 ft long, 50 ft wide, and 12 ft deep. Together the barges will have a capacity of more than 40,000 bbl of gasoline.

Delivery of the new vessels will be made next spring.

Geneva Steel Co. Is Important Hub In U. S. Steel's West Coast Plans

By TOM CAMPBELL
News-Markets Editor

ew York

• • **A man who** likes his work is good producer. But a man who doing exactly what he wants to o has even more on the ball. And hen a man is carrying out plans d dreams he has had for years, ıen anything is possible.

Dr. Walther Mathesius is running Geneva Steel Co. He was mong the first to believe in its posibilities, the one to fight for it and ıally the one who ran it in such a ay as to justify his own belief. ow everyone is on the bandwagon. wasn't always that way.

With the help of the Mormon peoe Mr. Mathesius is well on his ay to making a pace setter out of is important subsidiary of U. S. teel. Its steel production costs ake other steel people (within the . S. Steel Corp. too) a little envis. And well they might be.

Geneva Steel will in years to me be one of the best buys made U. S. Steel. It already looks at way. It is cold fact though at not too many years ago U. S. eel directors and top officials felt at future steel consumption posbilities on the West Coast were thing to write home about.

So much did they think this that ey threw cold water on any atmpt to build a plant—with their oney—in Utah. Not only that t they took so long to make up eir minds over whether a plant as even feasible that Henry aiser built Fontana. That plant now one of Geneva's formidable mpetitors on the West Coast.

One can hardly blame U. S. Steel. s officials—who had the authority felt they had good reason to beve that Tennessee Coal, Iron & ilroad Co. would be able to comte with any Utah steel plant. ey thought that hot-rolled coils uld economically be shipped from Birmingham to Columbia Steel on the coast and that a West Coast steel plant like Geneva was unnecessary.

The war changed all this. So did growth of the West Coast. Or so it seems now. But up to the last minute corporation people believed that TC&I was the logical source for Columbia's hot-rolled coils. It is now clear that this was definitely not the answer. Depletion of ore reserves, poor coal, changes in freight rate structure and the f.o.b. mill setup are a few other reasons why the Southern mill of U. S. Steel could not do as good a job as Geneva can—and will.

But today all is to the good for U. S. Steel and its Geneva Steel Co. Studies—after the amazing population figures for the West Coast were a fact—show that steel demand there is much greater than all but a few in U. S. Steel thought it would be, only a few years back.

But just as the experts—pessimists in this case—were wrong in the late 30's so may they be wrong this time. Demand on the West Coast may come somewhere near what those exuberant West Coasters said it would be back a few years ago. Or it might even match their current talk—that West Coast people will use everything that Geneva and Fontana can make —and more.

Background

New York

• • • Columbia Steel proposed a steel plant in Utah as early as 1922. L. F. Rains and others saw this possibility. Nothing was done about Utah but Columbia grew rapidly. U. S. Steel bought Columbia in 1930.

Although he coasted along for a while, "Ambie" Diehl, sent out west by Big Steel to run Columbia, came to life with a bang in 1935 on the possibilities of an integrated steel plant in Utah. He got the cold shoulder from those in charge of the purse strings at U. S. Steel Corp.

The Utah steel plant came to life again when FDR thought there was not enough steel with which to win the war. That did it.

Dr. Walther Mathesius

It was the U. S. Government backed by Bill Hauck's (wartime steel capacity adviser) report on steel capacity which sparked the building of Geneva. And it may have been FDR's hunch that a West Coast steel plant would mean more votes that made this plant a *must.*

Even then U. S. Steel was not sold on the idea. But it did agree to build and operate the plant for the government without a fee.

When U. S. Steel built Geneva for the government, plans and construction were the best possible. Latest engineering advances, and more, went into the mill. Future possibilities were molded into the project. The result was one of the best planned mills in the country. Since Geneva had a sound basis for its existence because of raw materials, it is no miracle to those who have seen it grow.

But if the Mormons had turned thumbs down on the plant it would have been a different story. They didn't—thanks to persuasive powers of Walter Mathesius. The Mormons, a sturdy and thrifty tribe, needed the Geneva payroll to pay off farm mortgages. There was another reason why Geneva was lucky to be manned with Mormons—they wanted employment for their young people at home. This was not a reality until Geneva was built.

Geneva's capacity when it was finished in February 1944 was

(CONTINUED ON NEXT PAGE)

Industrial Briefs . . .

• To Build Tools—In an effort to speed up production of its new four cylinder, medium sized, six passenger automobile, the Fiat Automobile Co. of Turin, Italy, has contracted with the Budd Co., Philadelphia, for the construction of dies, jigs and other tools here.

• More Nickel — New Jersey Metals Co., Eizabeth, N. J., has announced the expansion of their plant facilities and equipment to smelt and refine secondary nickel, its alloys and other nickel-bearing products, to meet varied and definite specifications for re-use in the ferrous and nonferrous industries.

• Smelters Directory — The 1948 edition of "World's Nonferrous Smelters and Refineries" has been published recently by Quin Press, Ltd., London, England. This is the first postwar survey of the world's nonferrous smelting and refining industry.

• Group Leaders—The Foundry Equipment Manufacturers Assn. has named the following officers to serve during 1949: William L. Dean, Mathews Conveyer Co., Ellwood City, Pa., president; John Hellstrom, American Filter Co., Louisville, vice-president; and Arthur J. Tuscany, Arthur J. Tuscany Organization, Cleveland, executive secretary and treasurer.

• New Department — Binks Mfg. Co., Chicago, manufacturers of spray painting and water cooling equipment, has established a new customer service department under the direction of Joseph Vokoun. The new department will operate as an independent unit of the company.

• Moves — National headquarters of U. S. Steel Supply Co. were moved to 208 S. LaSalle St., Chicago, affecting only executives and general office personnel. The warehousing plant and Chicago district operation sales will continue at 1319 Wabansia Ave.

• German Scrap Price — The Joint Export Import Agency has announced that the export price for German cupola cast scrap has been adjusted from $52.50 to $45.50 per long ton.

• Sales Office—Establishment of a Cincinnati sales office in the Roselawn Center Bldg. and transfer from Indianapolis to Cincinnati of Frank Heap to head an expanded Cincinnati-Indianapolis sales territory has been announced by the Monarch Machine Tool Co., Sidney, Ohio.

• Elects Officers — The following officers were elected at a recent meeting of the Philadelphia chapter of the Institute of Scrap Iron & Steel, Inc.: Harry Stave, Stave Bros., Philadelphia, president; J. F. Malloy, Malloy & Schreiner, Philadelphia, vice-president; D. J. Giordano, Giordano Waste Material Co., Camden, N. J., treasurer; and Marcus J. Margulies, Luria Steel & Trading Corp., Philadelphia, secretary.

• Tool Distributor—The Geometric Tool Co., New Haven, Conn., has announced the appointment of Wright Industrial Supply Co., 3630 Detroit Ave., Toledo, as its distributor for northwestern Ohio carrying a stock of standard threading tools and chasers.

• Change of Address—Continental Iron & Metal Co. has recently announced the removal of their office and warehouse to 2635 West Grand Ave., Chicago.

• Strikes Uranium Ore—Robert Campbell of the Camray Mining Syndicate has recently discovered deposits of uranium ore along the northeastern shore of Lake Superior. Test assays showed the radioactive deposits to be 59.1 pct uranium ore.

(CONTINUED FROM PAGE 149)

1,283,400 net tons of steel ingots and 1,150,000 tons of pig iron. The pig iron capacity will probably be unchanged next year. But steel-making capacity will rise to at least 1,373,000 net tons when present plans are completed. There will still be room for another open-hearth furnace. The metallics will be available. So there will probably be another furnace some time in the future.

Geneva is scheduled by 1949 to produce each year a maximum of 350,000 tons of hot-rolled coiled, 500,000 tons of plates and 160,000 tons of structural steel products. With Consolidated Steel, large West Coast fabricator, now being part of the family, it is not hard to guess where a lot of the plates and structurals will go. It is already known that the coils will go to Columbia at Pittsburg for tinplate and Torrence for cold-rolled sheets. A pipe mill for Geneva is a good bet. But not right away.

The U. S. Steel Corp.—as it always does—made up for lost time and for temporary lack of interest once it got going. Its relations on the West Coast, its expenditures out there and the interest shown by its directors means much for the far west.

But it is breathtaking—or should be—to realize how close the corporation came to not getting Geneva. And some people wonder if the same thing will be repeated on the East Coast. Will some other steel company step in and build a big Eastern Seaboard steel plant while U. S. Steel is weighing the pros and cons—even though it has its plans, its ore and its men. The best guess is that Big Steel will get there first.

Net Earnings Reported Up

Detroit

• • • **Net earnings** for the quarter ended Sept. 30 for Monroe Auto Equipment Co., Monroe, Michigan, totaled $225,596 after taxes compared with $155,650 a year ago.

Net sales were $3,825,304 compared with $3,047,214 for the first quarter last year.

B. D. McIntyre, president and general manager, explained that a strike extending to 13 full working days and a regular shutdown for inventory are included in the period covered by the report.

Possible Gas Diversion May Hurt Some Pittsburgh Industrial Consumers

° ° °

By GEORGE F. SULLIVAN
Pittsburgh Regional Editor

° ° °

Pittsburgh

• • • **Some 160 industrial** plants in this area face more cold weather natural gas cuts than they planned on this winter. It appears that the Federal Power Commission may set aside a contract under which a Pittsburgh gas company was slated to receive additional natural gas from the Southwest this winter. At least this is likely if FPC follows the recommendations of its staff counsel and one of its examiners.

The case points up the ramifications of the pipeline business, explains in part the demand for steel pipe and tubing and indicates the extent to which Washington can allocate natural gas throughout the country.

The gas diverted would go to points in Missouri, Northern Pennsylvania and New Jersey. Some communities in these localities are not now using natural gas. To supply them would require about 10,000 tons of pipe and tubing.

Following the FPC examiner's report of Oct. 29, recommending that these new applicants be served, a 20-day period is allowed for complaints by those who feel the move would hurt them. FPC expected plenty of complaints. Therefore the proposed diversion may not be fully approved.

The contract that may be set aside was entered into by Consolidated Natural Gas Corp. with Texas Eastern Transmission Corp., owners and operators of the war-built Big Inch and Little Inch lines. Peoples Natural Gas Co., one of three subsidiaries of Consolidated, is one of the three big Pittsburgh gas companies. Consolidated signed up with Texas Eastern for 75 million cu ft of gas daily this winter, over and above the 125 million cu ft it had previously arranged for. Only the 75 million cu ft is now in question.

Peoples estimates its peak demand (it serves part of the Pittsburgh district, and extends to Johnstown and Altoona) at 275 million cu ft on a zero day. The Consolidated system as a whole, with two other subsidiaries serving eastern Ohio and part of New York state, has an estimated peak demand of 1.3 billion cu ft daily on a zero day.

On this basis the 75 million cu ft daily does not look large. But a company spokesman estimates that the addition of 75 million cu ft could make a considerable difference to Pittsburgh industry during long cold spells. Pittsburgh's Mayor Lawrence is convinced of this, sees the potential diversion as a threat to the city's economic life.

The two other principal gas companies here are somewhat concerned. Like Peoples, they now draw on Texas Eastern Transmission Corp. While they have not contracted for any additional volume from this source they fear they won't be able to if they want to.

There has been no comment on the fact that the Big and Little Inch lines must, under the terms of the purchase contract with the Government, be kept in condition to pump oil in case of a national emergency.

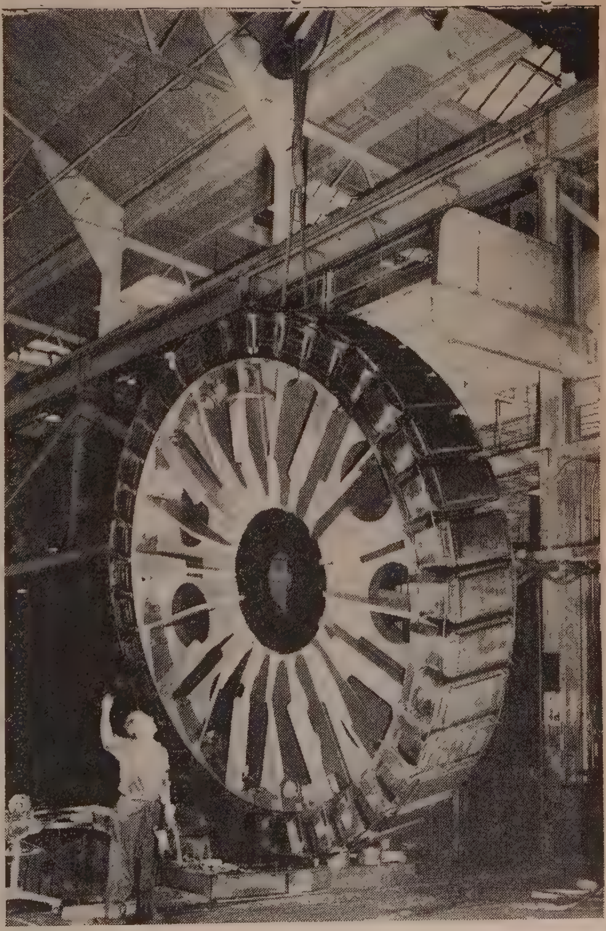
If FPC approves the examiner's decision in authorizing the new service, less than 10 miles of new 6-in. line would be needed in Indiana and about 110 miles of 8 and 10-in. in New Jersey. For the Missouri part of the project the requirements are estimated at: 14.25 miles 8-in.; 44 miles 6-in.; 20.75 miles 4-in.; and 10.5 miles 2-in.; all for transmission lines. Some additional footage would be needed for distribution. This totals over 10,000 tons of pipe, though the figure, being an estimate based on probable wall thicknesses, could be as much as 10 pct lower.

Against the nearly 5 million tons of pipe for gas lines planned or being built throughout the country the 10,000 tons involved in this case is small potatoes. What industry officials consider significant is that the government may be stepping in to allocate gas. If it allocates gas, may it also allocate the pipe to supply it?

° ° °

A BIG WHEEL: *A large rotor of a diesel-driven generator is being lifted from the floor of the General Electric Co.'s Schnectady plant. The rotor which is over 14 ft in diam is part of one of the six generators to be used to generate electricity for Mexico City.*

° ° °



Small Business Committee Sets Up Criteria for Identifying Distress Cases

* * *

Washington

• • • **How** badly in need of steel do customers of mills have to be before Uncle Sam will lend a hand?

Notwithstanding that there are as many answers to this question as there are steel customers, a Senate committee last week jumped into this controversy with both feet and came up with its own answer.

Working on the theory that "you can't tell the players without a program," the Senate Small Business Committee has decided that Washington can't tell a "distress case" among manufacturers of farm implements without a set of criteria.

Here are the committee's criteria for identifying a "distress case":

(1) Are your total receipts of steel for 1948 substantially (15 pct) below 1947 receipts? Calculation of 1948 annual purchases is to be based on purchases listed in an accompanying questionnaire.

(2) Is a substantial and increasing proportion of your steel being procured from gray market sources? Any proportion over 10 pct of total purchases is considered excessive. Or,

(3) Has your employment been materially reduced in 1948 as compared with 1947? A reduction of 10 pct is considered evidence of distress. And/or,

(4) Can you submit written evidence to the effect that suppliers of steel during the first half of 1948 have refused to accept orders for the last half of 1948?

(5) Can you show that you are primarily a manufacturer of farm machinery and or equipment?

Now, if you are still in the running at this point, the Senate Small Business Committee will take your case to prospective suppliers. After that, it's up to the Agricultural Equipment Industry Advisory Committee to decide whether you'll get all or any part of the steel you claim you need.

Here's the form which is now being distributed by Senator Wherry, R., Neb., Small Business Committee chairman, to hard-pressed farm equipment manufacturers:

(1) The applicant authorizes the committee to present to potential suppliers, either in the Agricultural Equipment Industry Advisory Committee, or the Steel Products Industry Advisory Committee, the steel requirements of his firm for the next 3 months as designated below.

(2) The applicant certifies that the steel requested herein is to be used only for the manufacture of agricultural equipment. The principal products of the company are: (list them).

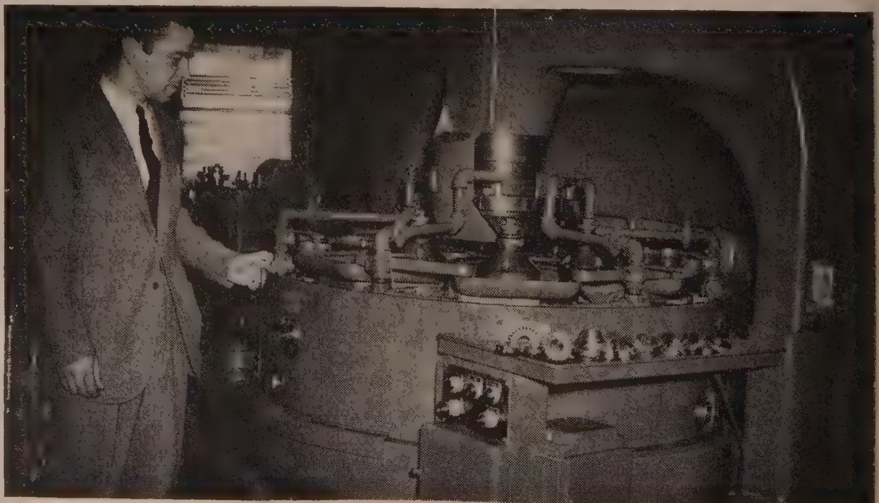
(3) The applicant agrees that when the quantities of steel requested in this application have been received or when firm commitments for the supply have been made, the suppliers of the steel and the Senate Small Business Committee will be so notified.

All of this may be very interesting—for the farm equipment producers. But the implications of this new program are legion. The farm machinery people today are on the receiving end of what may be construed as a priority system without any force of law. Granted, Senator Wherry has a special regional interest in the farm machinery industry. While this latest step may or may not establish a precedent for other industries, it is a significant step and one well worth noting for whatever ammunition it affords in the coming congressional debate over mandatory priorities and controls.

SENATE SMALL BUSINESS COMMITTEE FORM

Types of Steel Needed	*Tonnage Required in Each Type*	*Gauges & Dimensions*
Plates	....	....
Bars, Hot Rolled	....	....
Bars, Cold Rolled	....	....
Pipe, Butt Weld	....	....
Tubes, Seamless	....	....
Tubes, Mechanical and Pressure	....	....
Sheets, Hot Rolled	....	....
Sheets, Cold Rolled	....	....
Sheets, Galvanized	....	....
Strip, Hot Rolled	....	....
Strip, Cold Rolled	....	....
Other	....	....

STRIKE INSTIGATOR: *This Fellows Gear Shaper which cuts 60 gears an hr recently caused a strike of 15,500 workers at the Austin Motor Works in Britain.*



October Steel Output Largest in History For a Single Month

New York

• • • **More steel** was produced in October in the United States than n any previous month during war or peace, according to the American Iron and Steel Institute.

The production of ingots and teel for castings during October otaled 7,973,416 net tons, exceedng the previous peak in March 944 by more than 147,000 tons, he institute reports.

Output of steel in 10 months of 948 was 72,960,936 tons, nearly ,700,000 tons higher than in the imilar part of 1947, record peaceime production year and only 3 pct lower than the output in 10 months of 1944, year of greatest teel production.

Steelmaking furnaces were operated at an average of 99.9 pct of ingot capacity in October, highest operating rate since October 943. In September, the rate was 96.1 pct and the average for 9 months was 92.1 pct. Openhearth and electric furnaces were each operated at slightly above rated capacity.

October was the sixth consecuive month in which steel producion exceeded 7 million tons, the ongest such period since 1944. The output of October was more han 365,000 tons larger than that of March 1948, the previous record postwar production month, the institute said.

[THE IRON AGE has previously estimated that 1948 steel production will equal 88 million tons.]

Iron and Steel Exports At New Monthly Low

Washington

• • • **Continuing** a down trend, the volume of iron and steel exports reached a new monthly low in August. According to the Dept. of Commerce, the month's export tonnage amounted to 308,484, nearly 12,000 tons below the previous low of 320,190 net tons in July.

Total exports for the first 8 months of 1948 thus reached a figure of 3,086,082 tons as of the end of August.

Net tonnages exported during August were: ingots, blooms, billets, slabs, and sheet bars, 14,380, a drop of 4000 over July; wire rods, 2814, a slight increase; skelp, 7061, more than triple increase; and pipe and tubes, 58,083, a rise of 13,000 tons over July.

August export tonnages, by commodity, were: iron bars, 70; concrete reinforcement bars, 10,547; steel bars, cold finished, 4091; other steel bars (excluding alloy), 21,606; alloy steel bars, 2672; welding rods, electric, 966.

Boiler plate, 2293; other plates, not fab, 23,443; plates, fab., punched or shaped, 1642; iron sheets, black, 829; steel sheets, black, 27,419; galvanized sheets, 4289; strip steel, cold rolled, 4727; strip steel, hot rolled, 4366; tinplate and tagger's tin, 38,468; terne plate (incl. long ternes), 574.

Structural shapes, plain, 19,946; structural shapes, fab., 9194; frame and sashes, 210; sheet piling, 1840.

Rails, 60 lbs. per yd. and over, 11,326; rails, less than 60 lbs. per yd, 572; rails, relaying, 4231; splice bars and tie plates, 1730; frogs and switches, 414; railroad spikes, 659; railroad bolts, nuts, and washers, 394; car wheels, tires and axles, 2158.

Seamless black pipe, 2044; seamless casing and oil line pipe, 16,917; seamless boiler tubes, 2588; welded black pipe, 4512; welded galvanized pipe, 2774; welded casing and oil line pipe, 23,759; welded boiler tubes, 43; other pipe and fittings, 5946.

Plain wire, 4937; galvanized wire, 3801; barbed wire, 1698; woven wire fencing, 550; woven wire screen cloth, 452; wire rope and strand, 1147; wire nails, 1518; other wire and manufactures, 3180.

Horseshoe nails, 10; tacks, 249; other nails, incl. staples, 742; bolts, nuts, rivets and washers, except railroad, 4470; forgings, 2108; horseshoes, 88.

POWERED TAKE-OFFS: *Heavy duty Dart trucks such as this have been equipped with twin disk hydraulic power take-offs. They are used to haul 20-ton loads of iron ore from the open-cut pits of the Mesabi range.*

Canadian Output Of Ingots and Castings Lower in September

Toronto

• • • **Canadian production** of steel ingots and castings in September amounted to 257,856 net tons which was an average daily rate of 82.7 pct of rated capacity as compared with 263,054 tons in August when the average was at the rate of 81.6 pct, and with 234,188 tons or 75.1 pct for September, 1947. Output for the month under review included 248,622 tons of steel ingots and 9243 tons of steel castings.

Charges to steel furnaces in September included 137,865 tons of pig iron; 77,084 tons of scrap of consumers' own make and 67,686 tons of purchased scrap.

For the first 9 months this year production of steel ingots and castings totaled 2,361,387 net tons, which compares with 2,183,564 tons in the 1947 period and 1,750,846 tons in 1946.

Following are comparative monthly figures for steel ingots and castings for 1948 in net tons:

	STEEL INGOTS	CASTINGS
January	247,768	8,958
February	230,183	9,463
March	275,349	10,677
April	254,315	9,951
May	279,688	9,879
June	249,710	9,655
July	238,104	6,768
August	254,362	8,692
September	248,622	9,243
Total 9 Months	2,278,101	83,286

Net Profit Replaces Loss

Detroit

• • • **Net profit** of F. L. Jacobs Co., automotive parts and household appliance manufacturer, totaled $409,838 for the fiscal year ended July 31, 1948. A net loss of $219,786 was reported for the same period a year ago.

Consolidated net sales aggregated $37,085,326 compared with $32,888,048 in the preceding fiscal year.

Testimony Favors Congressional Action On Basing Point Issue

But Doubt is Expressed That New Congress Will Act On Pricing Method

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By GEORGE BAKER
Washington Bureau

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Washington

• • • **The Senate** Subcommittee on Trade Policies is concluding its second week of hearings on the issue of delivered prices versus f.o.b. selling. And the record of testimony thus far clearly indicates overwhelming sentiment favoring congressional clarification of recent court and administrative decisions on this important issue.

But despite the volume of testimony in favor of such legislative clarification, it is problematical whether the new Congress actually will give the stamp of legality to any of the proposals now being made to the subcommittee.

For one thing, the 1948 court decisions which appear to make illegal various systems of delivered prices represent the culmination of a long campaign waged by the Federal Trade Commission. It is difficult to see how a Democratic Congress and a Democratic Administration will legislate the defeat of this campaign.

The issue has long since become an academic controversy as far as two of the most important industries in the nation—steel and cement—are concerned. However, these two industries have a vested interest in the controversy, since delivered price systems still are in effect for a score of other industries.

While the basic purpose of the hearings as they now are being conducted by Senator Capehart, R., Ind., is simply to afford business and industry the opportunity to tell Congress how they feel on the subject of delivered prices, the hearings also have served to point up several important side issues.

One of the most important of these is the difference of opinion within the Federal Trade Commission as to just which selling practices are legal and which are not. To put it bluntly, the difference of opinion is sharply marked.

Walter B. Wooden, associate general counsel of FTC and longtime advocate of f.o.b. selling for all industries, told the subcommittee that the alleged confusion, uncertainty, and fear created by the recent decisions was greatly exaggerated. What actually is taking place, he said, is the recurrence of "a powerful drive to emasculate the antitrust laws on the ground that they are so vague and uncertain that business does not and cannot know what the law requires or else that the law is basically irreconcilable with business necessities."

He said he saw no way in which delivered price systems could be legalized by Congress without making it "decidedly easier" for price-fixing conspiracies to operate and "decidedly more difficult" for the Federal Government to break them up.

"I cannot believe that this subcommittee will propose, or that Congress will enact, legislation which would involve even a reasonably probable danger of encouraging price-fixing conspiracies by legalizing a pricing method which the Supreme Court found to be 'a handy instrument to bring about elimination of any kind of price competition.' "

But Lynn C. Paulson, assistant chief trial counsel for FTC and presently trial counsel in the Commission's complaint against the use of the basing point system as it formerly was applied in the steel industry, said he could not see the need of proceeding upon an individual basis against freight absorption in order to destroy price-fixing. "I think there is danger to the competitive system in placing too many restrictions on competing," he declared.

Mr. Paulson struck at the prevailing FTC view as expressed by Mr. Wooden that f.o.b. selling is the only safe sales method for industry to apply. "As to what the law on basing point selling is today, I would say that the net result of decided cases is that sellers who have been convicted of price-fixing, or suppression of competition by discriminating in price pursuant to a basing point plan, must thereafter have a plant price at their plants which is not fictitious and offer to sell at that price when requested. It goes no further," he asserted.

"The Supreme Court in the cement case in the last analysis did not do more than say that the respondents in that case had combined and conspired to suppress competition," he continued. "It did not base its judgment on the fact that respondents used or practiced freight absorption but upon the

Coming Events

Nov. 28-Dec. 3 **American Society of Mechanical Engineers**, annual meeting, New York.
Nov. 29-Dec. 4 **National Exposition of Power & Mechanical Engineering**, New York.
Dec. 2-4 **Society for Experimental Stress Analysis**, annual meeting, New York.
Dec. 2-4 **American Institute of Mining & Metallurgical Engineers**, annual electric furnace steel conference, Pittsburgh.
Dec. 2-4 **American Metallizing Contractors Assn.**, annual meeting, Tulsa, Okla.
Dec. 3 **Magnesium Assn. and Mellon Institute**, magnesium meeting, Pittsburgh.
Dec. 6-8 **Electric Welding Conference**, Detroit.

1949

Jan. 10-14 **Society of Automotive Engineers**, annual meeting, Detroit.
Jan. 10-14 **Material Handling Institute and American Society of Mechanical Engineers**, Materials Handling Show, Philadelphia.
Jan. 14 **Malleable Founders' Society**, semiannual meeting, Cleveland.
Jan. 24-28 **American Society of Heating & Ventilating Engineers**, annual meeting, Chicago.

ecord of combination in its en- rety.

"Again I say the net result of e court decisions is to advise sell- s that they must have a plant ice at every plant and offer to ll f.o.b. mill when requested, if ey wish to discriminate in price d match competitors' prices. hat is where the matter should me to rest unless and until the cts justify additional corrective tion," he stated.

More than a score of business- en told the subcommittee that angeovers from delivered price lling to f.o.b. selling would cause rious damage to their industries d to the geographic areas in hich their plants are situated. mong those who presented their ews to the subcommittee were:

John Hancock, New York, N. Y.; illiam Schoenberg, United Ce- ent Lime & Gypsum Workers; eWitt Emery, National Small usiness Men's Assn.; Clark S. eardslee, Chemical Sales Corp.; H. Collier, The Steelduct Co.; . H. Reams, Reams Lumber Co.; on L. Davis, Aetna Plywood & eneer Co.; C. A. Winslow; Brig. en. Paul F. Yount, Transportation orps; Frank R. Nichols, Nichols ire & Aluminum Co.; W. H. chleuter, Schleuter Manufactur- g Co.; H. O. Anderson, Rock- estos Products Corp.; H. Olden, incinnati Sheet Metal & Roofing o.; Dwight Winkelman, Associ- ted General Contractors of Amer- a; L. Aronstan, Southern GF Co., c.; John H. Congdon, Congdon arpenter Co.; J. E. Eckstein, ckstein Co.; M. G. Ensinger, nion Wire Rope Corp.; Everett F. errill, Merrill & Usher Co.

EI Elects Officers At Chicago Meeting

hicago

• • **C. D. Clawson**, president of erro Enamel Corp., Cleveland, as elected to a second term as resident of the Porcelain Enamel stitute at the Institute's 17th nnual Meeting held recently at otel Stevens, Chicago.

Newly elected to the office of ce-president of the institute ere T. G. Harris, Porcelain Steel orp., Connersville, Ind., and R. A. adisman, Armco Steel Corp., iddletown, Ohio.

U. S. Steel's German Scrap

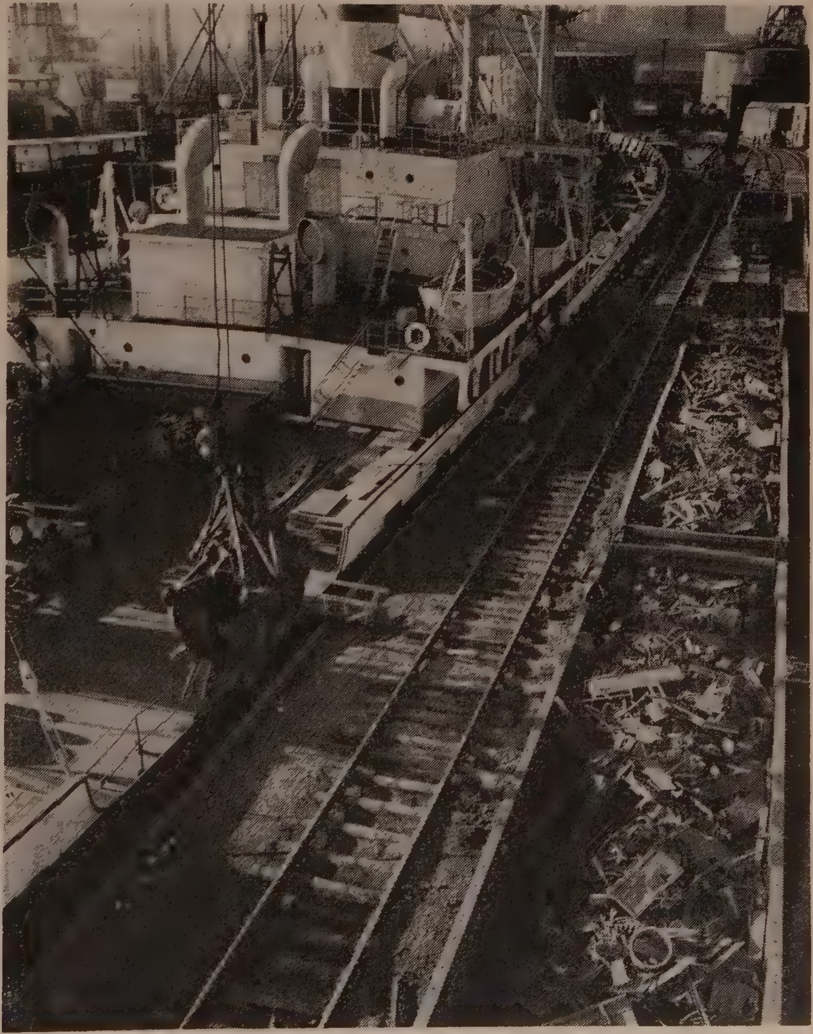
Philadelphia

• • • **The Louis Pasteur** docked here recently with 9438 tons of No. 1 heavy melting scrap from Germany for the Pittsburgh district mills of the U. S. Steel Corp. This is the first shipment of German steel scrap under the contract drawn up last May by Carnegie-Illinois with the Scrap Iron and Steel Import Corp.

Currently the scrap is being assembled in Germany at the rate of about 20,000 tons a month. It is hoped that this rate can be increased to 40,000 tons a month so that the 120,000 tons originally contracted for will be at German seaboard ports before the German rivers freeze over this winter.

It is believed in scrap circles that when the final agreements are made between Great Britain and the United States, this 120,000 tons will not be charged against the current United States immediate allocation of 375,000 tons or the additional 125,000 tons credited to future allocations.

Since the original contract drawn up between Carnegie-Illinois and the Scrap Iron and Steel Import Corp., Carnegie has obtained options on an additional 80,000 tons of German scrap. This additional tonnage will of necessity have to be worked in against current United States allocations—as will the 150,000 tons the Bethlehem Steel Co. is now in the process of contracting for. Previously Bethlehem had received 50,000 tons of German scrap, which also, like the first Carnegie contract, is not expected to be credited against the present allocation agreement.



AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR 1948
(Preliminary)

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	Number of weeks in month
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	6,768,497	95.5	343,169	77.5	361,110	79.0	7,472,776	93.6	1,686,857	4.43
February	6,245,338	94.3	340,596	82.3	354,270	82.9	6,940,204	93.0	1,676,378	4.14
March	6,841,578	96.6	363,235	82.0	403,322	88.2	7,608,135	95.3	1,717,412	4.43
1st Quarter	*19,855,413*	*95.5*	*1,047,000*	*80.6*	*1,118,702*	*83.4*	*22,021,115*	*94.0*	*1,693,932*	*13.00*
April	5,640,168	82.2	185,089	43.2	392,900	88.7	6,218,157	80.4	1,449,454	4.29
May	6,799,289	96.0	355,562	80.3	416,801	91.1	7,571,652	94.8	1,709,177	4.43
June	6,481,879	94.5	356,810	83.2	417,665	94.3	7,256,354	93.8	1,691,458	4.29
2nd Quarter	*18,921,336*	*90.9*	*897,461*	*69.0*	*1,227,366*	*91.4*	*21,046,163*	*89.7*	*1,617,691*	*13.01*
1st 6 months	*38,776,749*	*93.2*	*1,944,461*	*74.8*	*2,346,068*	*87.4*	*43,067,278*	*91.9*	*1,655,797*	*26.01*
* July	6,346,423	89.8	324,991	73.6	395,610	86.7	7,067,024	88.7	1,598,874	4.42
August	6,631,157	93.6	371,205	83.8	435,246	95.2	7,437,608	93.1	1,678,918	4.43
* September	6,592,226	96.3	387,153	90.5	436,231	98.7	7,415,610	96.1	1,732,619	4.28
* *3rd Quarter*	*19,569,806*	*93.2*	*1,083,349*	*82.5*	*1,267,087*	*93.5*	*21,920,242*	*92.6*	*1,669,478*	*13.13*
* *9 months*	*58,346,555*	*93.2*	*3,027,810*	*77.4*	*3,613,155*	*89.4*	*64,987,520*	*92.1*	*1,660,386*	*39.14*
† October	7,099,532	100.2	409,545	92.5	464,339	101.5	7,973,416	99.9	1,799,868	4.43
November										4.29
December										4.42
4th Quarter										*13.14*
2nd 6 months										*26.27*
Total										*52.28*

Note—The percentages of capacity operated are calculated on weekly capacities of 1,599,286 net tons open hearth, 99,962 net tons Bessemer and 103,228 net tons electric ingots and steel for castings, total 1,802,476 net tons; based on annual capacities as of January 1, 1948 as follows: Open hearth 83,610,690 net tons, Bessemer 5,226,000 net tons, Electric 5,396,770 net tons, total 94,233,460 net tons.

* Revised.
† Preliminary figures, subject to revision.

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YEAR 1947

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	Number of weeks in month
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	6,550,058	95.2	384,096	87.7	288,458	66.9	7,222,612	93.2	1,630,386	4.43
February	5,835,018	93.9	314,912	79.6	280,471	72.0	6,430,401	91.9	1,607,600	4.00
March	6,619,641	96.2	378,893	86.5	318,440	73.8	7,316,974	94.4	1,651,687	4.43
1st Quarter	*19,004,717*	*95.1*	*1,077,901*	*84.8*	*887,369*	*70.9*	*20,969,987*	*93.2*	*1,630,637*	*12.86*
April	6,365,670	95.5	375,675	88.6	310,497	74.3	7,051,842	93.9	1,643,786	4.29
May	6,640,004	96.5	372,878	85.2	326,132	75.6	7,339,014	94.7	1,656,662	4.43
June	6,317,705	94.8	351,247	82.8	308,762	73.9	6,977,714	92.9	1,626,507	4.29
2nd Quarter	*19,323,379*	*95.6*	*1,099,800*	*85.5*	*945,391*	*74.6*	*21,368,570*	*93.9*	*1,642,473*	*13.01*
1st 6 Months	*38,328,096*	*95.4*	*2,177,701*	*85.2*	*1,832,760*	*72.8*	*42,338,557*	*93.5*	*1,636,589*	*25.87*
July	6,033,512	87.9	256,125	58.6	289,048	67.2	6,578,685	85.1	1,488,390	4.42
August	6,329,497	92.0	346,033	79.0	315,622	73.2	6,991,152	90.2	1,578,138	4.43
September	6,152,348	92.5	334,425	79.0	310,684	74.6	6,797,457	90.8	1,588,191	4.28
3rd Quarter	*18,515,357*	*90.8*	*936,583*	*72.2*	*915,354*	*71.6*	*20,367,294*	*88.6*	*1,551,203*	*13.13*
9 Months	*56,843,453*	*93.8*	*3,114,284*	*80.8*	*2,748,114*	*72.4*	*62,705,851*	*91.9*	*1,607,842*	*39.00*
October	6,831,984	99.3	384,272	87.8	353,896	82.1	7,570,152	97.7	1,708,838	4.43
November	6,543,390	98.2	360,620	85.0	338,417	81.0	7,242,427	96.5	1,688,211	4.29
December	6,654,966	96.9	373,367	85.5	347,308	80.7	7,375,641	95.4	1,668,697	4.42
4th Quarter	*20,030,340*	*98.1*	*1,118,259*	*86.1*	*1,039,621*	*81.3*	*22,188,220*	*96.5*	*1,688,601*	*13.14*
2nd 6 months	*38,545,697*	*94.4*	*2,054,842*	*79.1*	*1,954,975*	*76.4*	*42,555,514*	*92.6*	*1,619,928*	*26.27*
Total	76,873,793	94.9	4,232,543	82.1	3,787,735	74.6	84,894,071	93.0	1,628,195	52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,553,721 net tons open hearth, 98,849 net tons Bessemer and 97,358 net tons electric ingots and steel for castings, total 1,749,928 net tons; based on annual capacities as of January 1, 1947 as follows: Open hearth 81,010,990 net tons, Bessemer 5,154,000 net tons, Electric 5,076,240 net tons, total 91,241,230 net tons.

Construction Steel . . .

• • • Fabricated steel awards this week included the following:

600 **Tons,** Cincinnati, transmission towers for Cincinnati Gas & Electric Co. to American Bridge Co., Pittsburgh.

500 **Tons,** Allentown, Pa., transmission towers through Stone & Webster Engineering Corp. to Lehigh Structural Steel Co., Allentown, Pa.

480 **Tons,** Cleveland, welded trusses and beams for the Austin Co., Cleveland, to American Bridge Co., Pittsburgh.

800 **Tons,** Ukiah, Calif., building for Masonite Corp., through Barrett & Hilp to Herrick Iron Works, Oakland, Calif.

625 **Tons,** Boston, Beth Israel Hospital, new main building and service building through Volpe Construction Co., Malden, Mass., to Bethlehem Steel Co., Inc., Bethlehem.

325 **Tons,** Apache Co., Ariz., Box Canyon bridge, through Vinson Construction Co. to American Bridge Co., Pittsburgh.

260 **Tons,** Deferiet, N. Y., steel frame conveyors for St. Regis Paper Co. through Charles T. Main Inc., Boston, to Groisser & Shlager Iron Works, Somerville, Mass.

175 **Tons,** Great Neck, N. Y., Temple Israel. Awarded to Grand Iron Works, New York.

160 **Tons,** Weston, Mass., new Weston High School, through Farina Bros., Newton, Mass., to West End Iron Works, Cambridge, Mass.

110 **Tons,** Salem, Mass., St. Joseph's Church through Gourdeau Construction Co., Salem to West End Iron Works, Cambridge Mass.

100 **Tons,** Everett, Mass., new Everette High School stadium through Platt Constructing Co., Cambridge, Mass., to West End Iron Works, Cambridge, Mass.

100 **Tons,** Boston, shoe factory for Green Shoe Co. through Canter Construction Co. to West End Iron Works, Cambridge, Mass.

100 **Tons,** Macon, Ga., margarine and mayonnaise plant for Durkee Famous Foods, to Ingalls Iron Works Co., Birmingham, through Rust Engineering Co., Birmingham and Pittsburgh.

• • • Fabricated steel inquiries this week included the following:

044 **Tons,** Kitsap Co., Wash., Pt. Washington Narrows bridge, Director of Highways, Olympia, bids to Nov. 19.

000 **Tons,** Wildwood, N. J., Grassy Sound Bridge, New Jersey Dept. of Highways, due Nov. 30.

561 **Tons,** Los Angeles, overcrossing on Hollywood Parkway at Western Ave., Calif. Div. of Highways, Los Angeles, bids to Dec. 9.

300 **Tons,** Scranton, Pa., school building, due Nov. 22.

253 **Tons,** Kittitas Co., Wash., Cle Elum River bridge, Director of Highways, Olympia, bids to Nov. 19.

• • • Reinforcing bar awards this week included the following:

000 **Tons,** Grand Coulee, Wash., construction at Grand Coulee Dam, Bureau of Reclamation, Spec. 2329, through Morrison-Knudsen Co., Inc., to Gilmore Steel & Supply Co.

000 **Tons,** Garrison, N. D., Garrison dam project through U. S. Engineers to Carnegie Illinois Steel Corp., Pittsburgh.

300 **Tons,** Quincy, Mass., 4 sludge tanks for Metropolitan District Commission through Farina Bros., Newton, Mass., to Concrete Steel Co., Boston.

700 **Tons,** Seattle, Veterans Administration Hospital, through Sound Construction & Engineering Co. to Bethlehem Steel Co., Inc., Bethlehem.

600 **Tons,** Boston, Beth Israel Hospital, new main building and new service building through Volpe Construction Co., Malden, Mass., to Bethlehem Steel Co., Inc., Bethlehem, Pa.

120 **Tons,** Durham, N. H., new engineering building for the University of New Hampshire through Volpe Construction Co., Malden, Mass., to Truscon Steel Co., South Boston, Mass.

• • • Reinforcing bar inquiries this week included the following:

3500 **Tons,** Garrison, N. D., Garrison dam project through U. S. Engineers, Bids close Dec. 1.

590 **Tons,** Cook Co., Ill., State highway bridge 263-0202-1-2, Bids closed Nov. 9, Thomas McQueen Construction Co. low bidder.

235 **Tons,** Los Angeles, overcrossing on Hollywood Parkway at Western Ave., Calif. Div. of Highways, Los Angeles, bids to Dec. 9.

125 **Tons,** Perce Co., Idaho, bridge across Clearwater River at Lewiston, Director of Highways, Boise, bids to Nov. 19.

120 **Tons,** Cook Co., Ill., Caldwell Ave. bridge, Thomas McQueen Construction Co. low bidder.

• • • Railroad car awards and inquiries this week included the following:

The Rock Island R.R. has ordered 100 hopper cars from the Pullman Standard Car Mfg. Co. The Pennsylvania R.R. will build 2000 heavy duty gondolas in their own shops at Altoona, Pa.

50 YEARS AGO

THE IRON AGE, *November 16, 1898*

• "An interesting subject for contemplation is the fact that never before have natural laws had such free play as now in the commercial world. Despite the inertia or ignorance and conservatism, the superficial interference of ignorant legislators and the short-sightedness and impractical schemes of enthusiastic reformers, commerce is being gradually freed from those shackles which have limited its scope."

• "Hugh S. Taylor of Homestead has invented and patented a process for manufacturing steel that is claimed to be rust proof. The Homestead Mfg. Co. plans to build a new plant with production entirely devoted to this new steel."

• "The London Economist admits, 'It may be that in the future we may have to take second instead of first place in the iron and steel trade of the world. What has proven true in manufacturing lines may become equally true in the mercantile world, and there are indications in England that this is being realized.' "

• "The annual report of the Commissioner General of Immigration for the fiscal year ended June 30, 1898, shows that 218,562 immigrants entered the country last year. Of these, 44,473 were illiterates over 14 years old, and 96,203 brought with them less than $30.00."

• "A series of experiments made with alloys of iron and nickel in Berlin indicate alloys with 30 pct nickel cannot be forged. The presence of nickel increases the resistance to stress, up to 16 pct, and elasticity declines. Beyond 16 pct tensile and crushing strength declines, while elasticity again increases."

• "Hunting new uses for steel is a search that is being steadily prosecuted now that prices are low enough to substitute its use for almost any material which it can replace. Its use in mines in place of timber has been inaugurated by some enterprising engineers, but a more significant undertaking is at Cripple Creek, Colo., where a big mine shaft is to be cased with steel."

Weekly Gallup Polls . . .

Analysis Reveals Some Factors Causing Poll Errors

Princeton, N. J.

• • • The crow having been consumed in quantities by all poll-takers, the question that they are now asking themselves and the question that readers are asking is, "What next?", according to George Gallup, director, American Institute of Public Opinion.

The election demonstrates two salient facts regarding polls. The first is that procedures and methods employed in election forecasts must be greatly sharpened and improved, particularly if they attempt in the future to pick the winning candidate in close elections. Researchers have had to lick tougher problems than this.

Several lines of investigation are now being carried on by the institute which will sooner or later uncover the faults in the methods used in the last election and will provide safeguards for future elections.

Not only is the institute looking into its procedures, but it has requested that a group of leading social scientists of the country examine the methods used in the recent election.

THIS group is headed by E. Pendleton Herring, formerly of Harvard University and now President of the Social Science Research Council. All the leading polling organizations have asked the same group likewise to check their findings.

One fact has already emerged, which seems to be of paramount importance. That is the factor of time. Enough evidence has already come to light in the institute's own analysis to indicate that polling operations in future elections must be set up in such a way as to cover last minute shifts in opinion. They cannot, as they do now, stop polling the week before the election.

But the second and by far the most important factor is that the election figures, even regarded in the most searching and critical light, demonstrate that opinion can be measured with a fairly small margin of error. A look at the election forecast of the Gallup Poll and the election results indicates this.

	Gallup Figures Pct	Latest Elec. Res. Pct	Points Deviation Pct
Dewey	49.5	45.5	4.0
Truman	44.5	50.0	5.5
Wallace	4.0	2.4	1.6
Thurmond	2.0	2.1	.1

The largest deviation, it will be noted, was on the Truman vote. It represents a deviation of 5½ percentage points. The average deviation on all four parties is three percentage points.

In the release four days before the election, it was indicated in the period of 13 years since the Gallup Poll was founded, the average error in a total of 197 election forecasts was 3.9 percentage points.

IN the case of Mr. Truman's vote, the error was 1.6 percentage points over this record which has been established since 1935. On the other hand, the average deviation for the other three parties came within the 3.9 percentage point figure which had been the actual average error in all elections previously covered.

Even more important to the American public is the fact that no other method has yet been devised which will perform the task with the same degree of accuracy. No one has yet found, either here or elsewhere in the world, a better way to ascertain public opinion than by the sampling process.

Procedures and Methods Are Being Sharpened to Uncover Faults and Insure Validity

° ° °

Polls Discontinued

New York

. . . As stated last week we had delayed decision on continued publication of Gallup surveys until a detailed report was received on possible changes in technique to avoid repetition of an error such as occurred in the election predictions.

The report has been received from Dr. George Gallup and in some respects it sets up new and improved survey techniques.

None the less, these surveys treat of so many controversial subjects and are now subject to so much question that the Editors of THE IRON AGE have decided to abandon their publication as of this week.

To be specific, no one has found a better way to measure knowledge about or attitudes toward such problems as the Marshall Plan, the draft, prohibition, taxes and other major issues of the day

DURING the coming months Congress, and the American people, will have many new issues to meet. Many will wish to know the views of the people on these issues—1. What is the opinion of the people on public housing? 2 What about taxes? 3. What are the views of the people regarding price control? 4. What is the attitude of the American people on the question of civil rights? 5. What do people think about the Marshall Plan? What do they know about it? Do they think it should continue? 6. What about federal aid to education? 7. What about the minimum wage? 8. What do various groups in the population think about proposals which will be made about labor legislation?

These problems are all vital to the American people. Until someone devises a better way of finding out what people know about these issues and what they think about them, the Gallup Poll will continue to function and to perform what it regards as a real service to the American people and to the democratic process.

ruckers Emphasize Speedy Steel Shipments

ABOVE

• Hot-rolled strip in 5-ton coils on a trailer en route from Carnegie-Illinois' Irvin Works near Pittsburgh to Follansbee Steel Corp. Although trucking this shipment to Follansbee, W. Va., saved less than $1 a ton, the steel got to its destination the same day. It also bypassed the shortage of railroad gondolas.

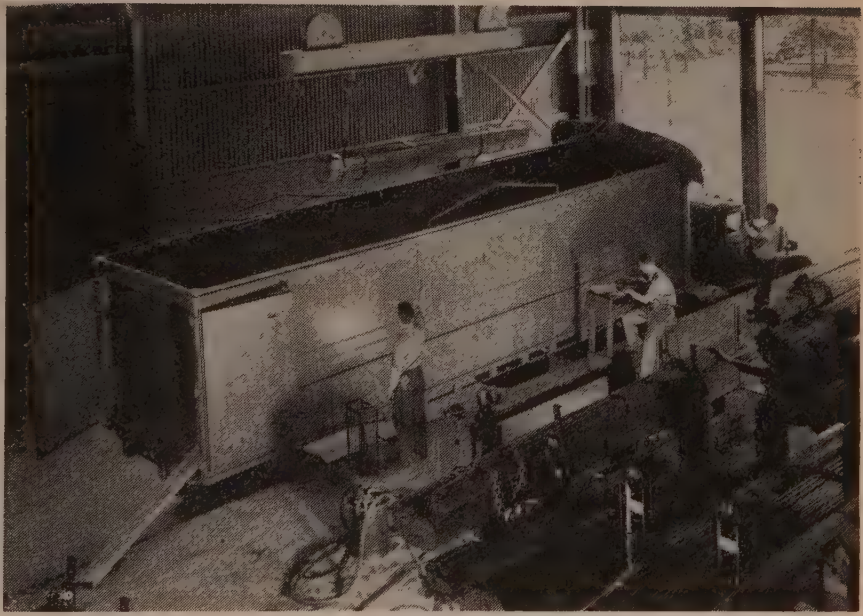
ABOVE

'his double trailer leaving the Irvin
'ks is carrying about 20 tons of sheets
ch it delivered in Detroit the next
The trucker doesn't stress the $24
ng in cost on the shipment but em-
sizes speed — overnight delivery — to
t-starved consumers. This contrasts
3 days by rail. In Ohio and Michi-
the payload limit is 25 tons; in
nsylvania 20 tons, on double trailers.

○ ○ ○

BELOW

Some truckers try for too much
it and run into trouble with police
hing crews. Police said that this
er, stopped near Pittsburgh, was car-
g 48 tons of coiled strip, a 33-ton
load. Railroads are in the van in
fight against overloading and Penn-
ania state police are cracking down
violators.



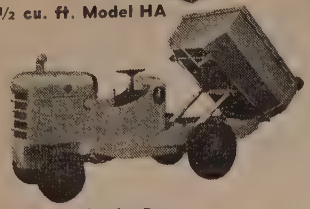
ABOVE

• Most steel is hauled in open trailers but some is moved in covered vans. Steel mills don't like to load this type vehicle—may one day charge extra for it. Here cold-finished bars are being loaded at Jones & Laughlin's Pittsburgh mill warehouse. The setup permits loading eight trucks at one time.

HOUGH
SAY "HUFF"
PAYLOADERS
PATENT 2,412,223

give production a LIFT

10½ cu. ft. Model HA


2 cu. yd. Payloader Buggy

¾ cu. yd. Model HF

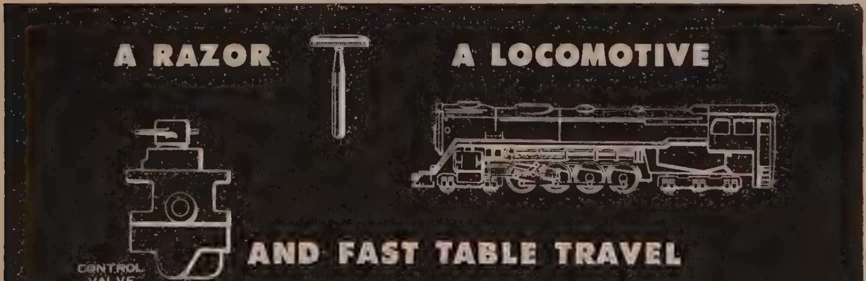
1¼ cu. yd. Model HL

1½ cu. yd. Model HM

A versatile Hough Payloader will take over material handling jobs usually requiring crews of men and perform them faster, cheaper, better. These versatile labor-and-time-saving Tractor Shovels on pneumatic tires have solved diversified problems in thousands of plants . . . digging, loading, unloading, carrying and dumping bulk materials, removing snow and paying off in many other ways. They speedily pivot and turn in and out of box cars, through narrow aisles and doorways, travel up and down ramps and on paved or unpaved areas.

All Payloaders have the famous Hough Automatic Tip-Back bucket motion that gets full bucket loads readily and carries them low without spillage. Also hydraulic bucket control that dumps and closes the bucket so that loads can be dumped slowly or quickly as desired. Investigate Payloaders! Find out how they can give production a lift and solve costly and laborious material handling jobs in your plant! Complete literature is yours for the asking.

THE FRANK G. HOUGH CO.
733 SUNNYSIDE AVE.
TRACTOR SHOVELS
LIBERTYVILLE, ILL.
SINCE 1920



125 f. p. m. longitudinal table speed means fast micro-accuracy* production with GRAND RAPIDS GRINDERS

Fast longitudinal table travel—*The fastest available in any grinder*—is an important reason why you find Grand Rapids Grinders in so many leading plants. Such rapid operation makes possible high-speed, accurate production . . . of small mass-produced razor parts, as well as massive locomotive sub-assemblies.

You get many other assurances of long-life speed and accuracy in Grand Rapids Grinders, such as: vibrationless rigidity achieved by massive one-piece column and base casting; patented vertical head adjustment; flanged-type, pre-loaded ball bearing spindle.

*Accuracy within 0.00025 limits

To serve you—*Your inquiry concerning your specific grinding needs will receive prompt attention. Grand Rapids Grinders include: Hydraulic Feed Surface Grinders, Universal Cutter Grinders, Hand Feed Surface Grinders, and Combination Tap and Drill Grinders.*

GALLMEYER & LIVINGSTON COMPANY

GRAND RAPIDS GRINDERS

200 STRAIGHT AVE., S.W., GRAND RAPIDS 4, MICHIGAN

Railroad Outlines Its Diesel Engine Progra

Flat Rock, Mich.

• • • The old-fashioned railro roundhouse is now square.

This week members of the I troit press section had the privile of inspecting probably the cleane railroad repair shop in Ameri The new shop was recently co pleted by the Detroit-Toledo & Ire ton R.R. at Flat Rock, 17 miles we of Detroit. Estimated cost is $50 000.

Visitors were shown the ne building designed by D-T & I eng neers to service the company's ni diesel yard locomotives. Plans ha been made to extend the building accommodate additional diesel un to be purchased in the future. present the D-T & I is operating steam units in addition to its ne GM diesels.

D-T & I executives expect t new diesels to pay for themselves reduced operating cost and i proved availability within the ne 5 years. Initial cost of the ne units was $89,000 each, but t price has recently been boosted $103,000.

D-T & I officials pointed out th the diesel is particularly adaptal for yard use. The greatest eco omies are realized, it was emph sized, when this new type moti power is used for yard work.

It is expected that diesel freig locomotives may be added at sor future date.

Operating costs of the yard se vice diesels are estimated as abo 80¢ per hr compared with an ave age operating cost of $2 per hr f steam switching locomotives.

The 125 Detroiters who made t trip recalled that D-T & I was on owned by Henry Ford. The Fo Motor Co. is still its largest cu tomer.

Executives of the railroad poir ed out that at present about 27 p of the railroads' traffic is coal. T line hauls considerable tonnage steel, but it has been observed th this volume has been falling off an increased number of steel use have come to rely on trucks a water shipment.

Also on display were a series new box cars and rebuilt gondo cars equipped with "Nailable Ste Flooring" produced by Great Lak Steel Corp. The D-T & I railro

s one of the pioneers of this
velopment.

According to company represen-
ives, Great Lakes' Nailable Steel
ooring has now been under devel-
ment for about 7 years. At pres-
, more than 600 freight cars are
iipped with this unique construc-
n which consists of steel chan-
s 8 in. wide laid crosswise in the
. There is a nailing groove be-
een each channel. Ordinary soft
ls driven into the grooves are
ormed by the bending action of
channel flanges. This holds
m firmly in place. The nailing
ooves are filled with plastic
terial.

The flooring is made of Great
kes' high tensile NAX steel. De-
ding on the size of the car, it is
orted that the cost of the Nail-
e Steel Flooring is three to four
es that of ordinary wood or
el.

n addition to its greater strength
Nailable Steel Floor converts a
dola, for example, into an all-
pose car. All kinds of freight
be nailed securely in place yet
cars are able to haul rough,
vy freight that chews up the
d floors of most freight cars.
the Detroit area a number of
dola cars are currently being
d to supply equipment to auto
nts; the same car is then used to
l scrap to Detroit steel mills.

tt Urges the Use Of More Training Programs

adelphia

• Broader and more effective
of industrial training pro-
ms as a means of gaining
ater acceptance for the prin-
es of a free economy was
mmended by William L. Batt,
sident of SKF Industries, Inc.,
re the second annual session
the Pennsylvania Society of
ining Directors here recently.

ndustry must take the lead in
vincing its workers and the
lic at large that a system
ch has constantly produced
e goods for more people at
er prices is the best system,
that under no other system do
loyees enjoy as many oppor-
ties for advancement or re-
e as considerate treatment,"
Batt declared.

---on cutting fuel bills in Half

During New England's severe winter of 1947-8, the J. C. Corrigan Company, Inc., of Dorchester, Mass., *cut its fuel bill nearly 50%* by installing a DRAVO *Counterflo* Heater. Coal for the previous winter season had cost this company between $1100.00 and $1200.00, whereas only $652.00 was spent for oil to fuel the DRAVO Heater during a similar period.

Besides fuel savings, the maintenance expense for the old heating system was practically eliminated because the DRAVO Heater operates automatically by thermostatic control. "Even more important" says J. C. Corrigan, President, ". . . part of our substantial increase in production this winter was due to the improved heating system."

Employees in the Corrigan plant manufacture custom-built conveying systems and need adequate warmth for efficient fitting and assembling. Previously, the plant was heated by a coal burning furnace using blowers and ductwork to distribute the warm air. Excessive roof heat losses in this 165' x 70' x 27' building prevented it from being comfortable. To heat "cold spots" that developed, eight pot-bellied stoves were installed. Maintenance of this old heating method required three hours labor every day. Coal and ashes had to be hauled through the heart of the busy plant. Even with the eight stoves to supplement the coal-fired furnace, heat was inadequate and employees spent valuable production time huddling around the stoves.

In November 1947, one DRAVO *Counterflo* Heater with an output capacity of 2,000,000 Btu was installed. No ductwork was needed. Only fuel and power lines had to be connected and a vent stack installed. Now the entire factory area is maintained at the proper degree of warmth for workers' comfort and efficient production.

During sub-zero weather last winter, the single DRAVO Heater delivered enough heat within 20 minutes after it was turned on to satisfy the thermostat's setting. Moreover, the DRAVO Heater is shut down to conserve fuel during non-working hours, whereas the coal furnace had to be fed over week-ends while the plant was not in operation to maintain some warmth for the Monday morning shift.

DRAVO *Counterflo* Heaters burn oil, gas or coal. Units burning non-solid fuels can be converted from one fuel to another very readily. Coal-fired heaters can be converted for burning gas or oil.

DRAVO CORPORATION, *Heating Section,* Dravo Bldg., Fifth and Liberty Avenues, Pittsburgh 22, Pa.

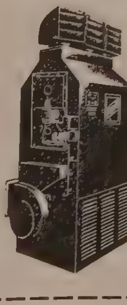
DRAVO CORPORATION

★

Pittsburgh • Cleveland • Philadelphia • Detroit • New York • Chicago • Atlanta • Boston
Sales Representatives in Principal Cities

DRAVO

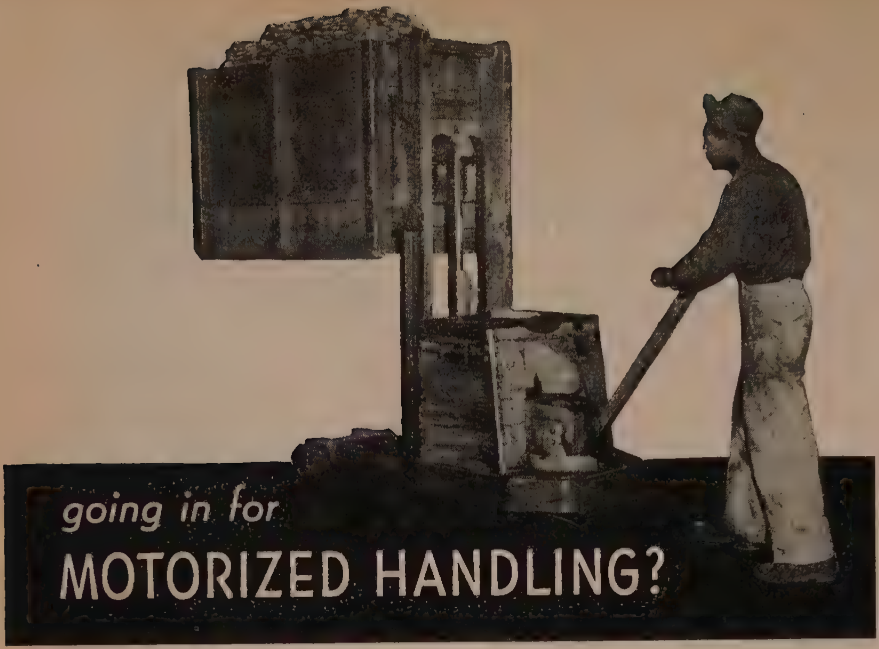
5 Function Heating with just **ONE UNIT**



7

DRAVO CORPORATION, Heating Section, Room 812-11
Dravo Bldg., Fifth and Liberty Avenues, Pittsburgh 22, Pa.
We would like to consider DRAVO *Counterflo* Heaters for:

Name.......................... ☐ Comfort Heating
Title.......................... ☐ Year 'round Ventilating
Company.......................... ☐ Process Drying
Address.......................... ☐ Tempering Make-up Air
City and State.......................... ☐ Heat Curing
P-6374



going in for
MOTORIZED HANDLING?

IS YOUR FIRM getting its first taste of battery-powered handling by using one or more motorized hand trucks? Chances are that you're trying out your equipment on all sorts of jobs . . . and realizing in how many ways battery-industrial trucks can speed handling and increase production.

If so, now is the time to become acquainted with long-life EDISON Nickel-Iron-Alkaline Storage Batteries . . . the batteries that give you real dollar economy. Did you know they're electrically foolproof—require no critical adjustment of charge rates—can't be injured by reverse charging, short circuiting or similar electrical accidents? Did you know they're built of rugged steel inside and out to withstand rough usage? Did you know EDISON Service Engineers check your batteries regularly and help you to maintain them in top condition?

EDISON Batteries last and last, and so through the years their superiority costs you less and less. Prove this to yourself by asking the EDISON users in your own vicinity, then profit by their experience.

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES: They're mechanically durable; electrically foolproof; quickly and easily charged; simple to maintain; not injured by standing idle.

Thomas A. Edison
©TAE INC

EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES

EDISON STORAGE BATTERY DIVISION
of Thomas A. Edison, Incorporated, West Orange, N. J.
In Canada: International Equipment Co., Ltd., Montreal and Toronto

Industrial Materials Account for 41 Pct Of Authorizations by EC

Washington

• • • As of Nov. 1, a summar shows that the Economic Coopera tion Administration had approve purchase orders totaling $983 mi lion worth of industrial goods suc as machinery, metals and ore steel mill products, and so on.

Industrial materials accounte for nearly 41 pct of the total $2,13 million worth of Marshall Pla help which the ECA authorize during its first 7 months.

In line with its announced inte tion of concentrating upon indus trial aid, the ECA last week a nounced new purchase authoriza tions for an additional $5 millio worth of industrial materials f first quarter 1949 delivery a more than $6 million for the se ond quarter.

At the same time, additiona authorizations for $5.7 millio worth of industrial orders we announced for delivery during th last quarter 1948. Another $3 million worth was authorized f purchase by the Netherlands, n delivery date specified.

The proposed Dutch purchase include $2.1 million worth of ma chine tools. These include drillin and grinding machines, lathes, an other varied items including sp cial types of textile and shoe m chinery.

Specific types of goods include in 1949 first quarter deliveries i clude $4 million worth of constru tion and mining machinery, largel to Bizone, Germany; $9.5 millio in iron and steel mill material mill products and ferro alloy mostly to the United Kingdo and, about $1.7 million worth o miscellaneous industrial materi including office type machines.

Approvals for next year's pu chases were stepped up followin quick action by the Marshall Pla countries after ECA had a nounced that authorizations woul be halted until loan agreemen were signed. A flood of signature followed.

Among them were: $35 millio with Norway, $170 million wit France, $80 million with Hollan $50 million with Italy, all of whic is to be used primarily for th

(CONTINUED ON PAGE 166)

BOTH BUILD PROFITS!

MATERIAL HANDLING
News

this CLARK team sure has EVERYTHING

...A most complete line with capacities from 1000 to 7000 lbs....PLUS unbiased evaluation of individual needs.

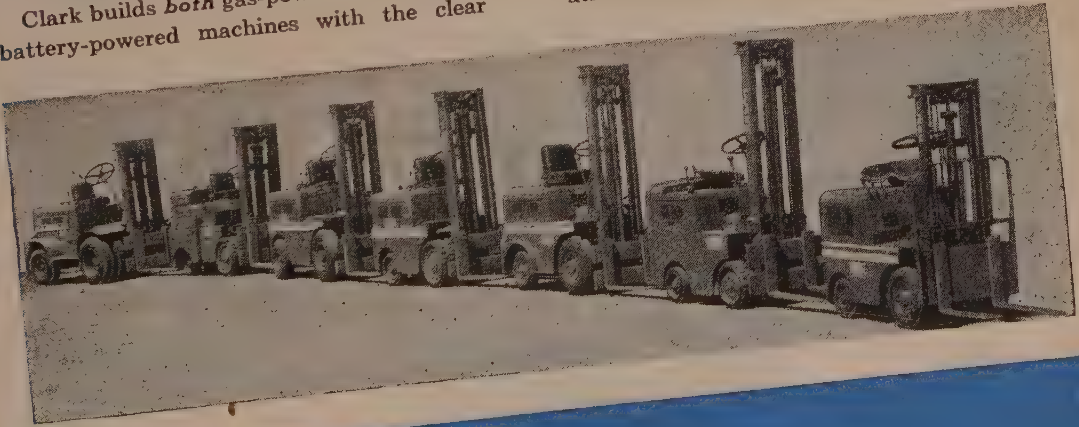
The truly vital element in any fabricated product is the idea back of it.

When Clark undertook some 30 years ago to build Materials Handling equipment, it was with the idea that it could evolve new and better handling methods and that it could produce for their implementation machines that would excel all others. That these objectives have long since been achieved and that they are maintained is demonstrated by Clark's leadership in the Materials Handling field. Furthermore, *users* endorse these products with enthusiasm and are quick to point out that they embody all the qualities that Industry has come to expect from Clark's unique experience, competence, skill and idealism.

Clark builds *both* gas-powered and electric battery-powered machines with the clear intent that each shall be the best of its kind. Insofar as possible, parts of the two power types are interchangeable for the sake of production economies which are passed along to the user in the form of lower initial cost and negligible maintenance costs. And practically all parts are manufactured in Clark's *own* plants to Clark's *own* exacting standards of quality and master workmanship.

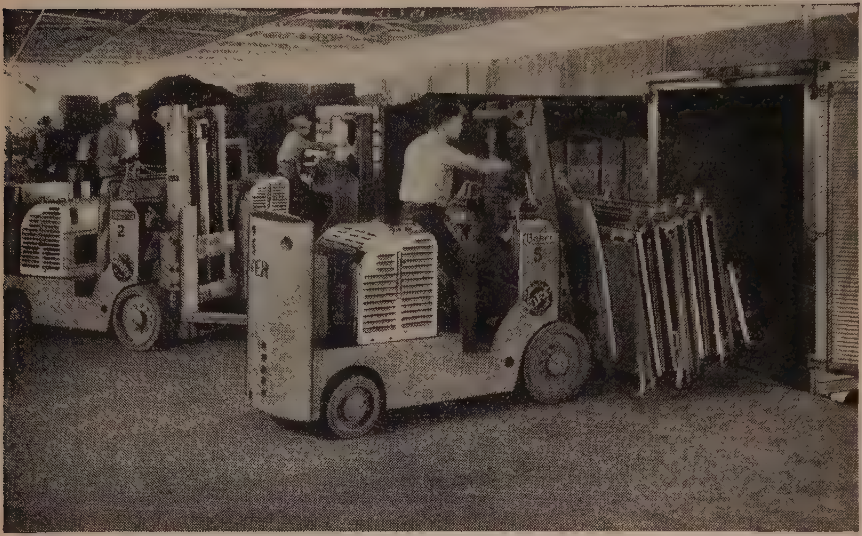
To an analysis of Materials Handling operations, Clark brings complete objectivity because it is the producer of both power types. Its sole aim is to determine which type will serve more efficiently and more economically under conditions involved.

For a complete line that has EVERYTHING, and for dispassionate and unbiased counsel concerning Materials Handling operations: CONSULT CLARK.



CLARK EQUIPMENT COMPANY
BATTLE CREEK 51, MICHIGAN
OTHER PLANTS: BUCHANAN, JACKSON, BERRIEN SPRINGS, MICHIGAN, U.S.A.

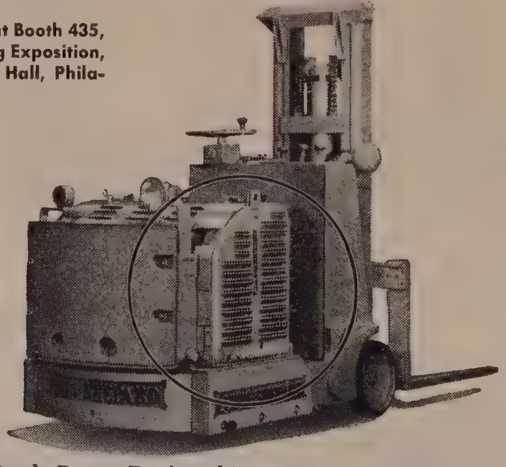
Let READY-POWER Solve Your Trucking Problems

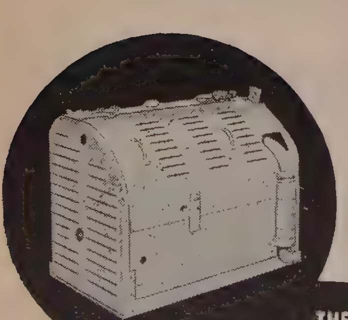


Ready-Power-Equipped Baker Fork Trucks Loading Semi-Trailers

Heavy loads and long hours can't stump Ready-Power gas-electric Power Units. They are designed to "take it" and built to last. They're better than good enough to handle the toughest jobs hour after hour, day after day with constant power generated right on the truck. Specify Ready-Power for your next electric truck or write for information about converting present equipment.

Visit the Ready-Power Display at Booth 435, 3rd National Materials Handling Exposition, January 10 to 14, Convention Hall, Philadelphia, Pa.





Ready-Power-Equipped Lewis-Shepard Fork Truck

THE READY-POWER CO.

3822 Grand River Ave., Detroit 8, Michigan

(CONTINUED FROM PAGE 162)

purchase of agricultural and industrial machinery and equipment and raw materials.

Totals for selected industrial goods included in the 7-month ECA summary were (rounded figures):

Chemicals and related products, \$55.3 million; coal and fuel, \$154.4 million; nonferrous metals, \$131.6 million; metallic ores and concentrates, \$8 million; primary iron and steel mill products, \$51 million; advanced mill products, \$10 million; iron and steel finished manufactures, \$3.1 million; machinery, including agricultural, \$94 million; vehicles and related equipment, \$90 million; and, miscellaneous industrial commodities, \$13 million.

Roll Engineer Retires

Pittsburgh

• • • **Jones & Laughlin** Steel Corp. reports the retirement of Norman C. Rendleman, roll engineer. During his 44 years of service with the corporation, Mr. Rendleman has developed a number of designs for mills. He has also developed rolls for special shapes and products, some of which have been patented.

N. C. Rendleman

He served his apprenticeship at Inland Steel Co. and started at J&L as a lathe operator in the Pittsburgh South Side roll shop in 1904.

Must Interrupt Schedules

Portland

• • • **The power** shortage in the Pacific Northwest has reached so critical a stage that aluminum plants at Troutdale, Vancouver, Longview and Spokane have been put on "interrupted schedules" between 5 p.m. and 7 p.m. daily. This action was started on Nov. 2, and will deprive the aluminum plants of up to 84,000 of their normal 650,000 kw load between those hours. This is said to mean an estimated reduction of more than 23,000 lb in the daily production of pig aluminum by those plants.

Sees $16 Billion Needed In Next 10 Years for New Electrical Power

Pittsburgh

• • • **Public utility** companies in he United States will have to spend ıbout $16 billion for new and imoroved generating and distribution 'acilities, within the next 10 years, ıccording to a prediction made by Comlinson Fort, manager of cenral station sales for the Westingrouse Electric Corp., in a recent ıddress before senior engineering tudents at Pennsylvania State Colege.

Production of electric power in his country must be increased 'rom slightly over 250-billion kw iours to 430-billion kw hours to upply a demand that will nearly louble within the next decade. An xpansion of the generating capacty of this country from 52 kw to ver 95-million kw will be required o produce this power. In money, aid Mr. Fort, this means that the lectric power business of the Jnited States probably will have to louble its investment over a period f the next 10 years.

A recently completed Westingrouse survey of the outlook for the lectric power industry indicates hat residential use of electricity in his country will increase in the ıext 10 years from an average of 438 kw-hr per home to 2400 kw-hr. Electricity now is available to 97 ct of the homes in this country.

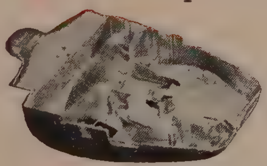
More than 6 million new cusomers have been added to utility ystems since the war ended and luring the past summer 1200 new ustomers were connected for elecric service each working hour of he day. More than 4 million farms ow are connected to distribution ines and in the next 5 years this umber will reach 5 million, or 90 ct of all occupied farms.

The availability of electric power lso has contributed greatly toward igher wages and shorter hours for 1e American workman, he said. argely due to electric power the echanical horsepower in industry as shown a great increase during 1e past 70 years. In 1879, a workıan had only 1.3 hp at his comıand. Today this average workıan has over 7 hp available, Mr. ort concluded.

10 H·P·Ms at HOOVER Keep Production Lines Humming!

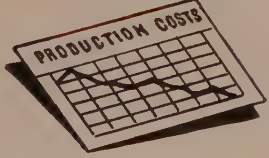
Die castings used in the Hoover electric cleaner

1



H-P-M die casting machines are the answer to production of intricate parts for Hoover electric cleaners as well as millions of parts that Hoover supplies to other manufacturers. Die castings permit greater freedom of design . . . better, more uniform, and lighter precision parts . . . and a decided savings due to high production output, lower material costs, fewer machining operations, less scrap.

2



H-P-M die casting machines are putting the "skids" under production costs in many companies where high priced material and labor are threatening profits. Why not take a tip from Hoover? Change to die castings. Let us show you how to make precision metal parts better . . . faster . . . cheaper with H-P-Ms. Two basic types of machines—(1) cold chamber, (2) submerged plunger, are available in a complete range of sizes. Call in a nearby H-P-M engineer to recommend the correct type and size for your job.

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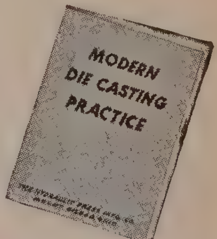

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HPM *All-Hydraulic Self-Contained* DIE CASTING MACHINES

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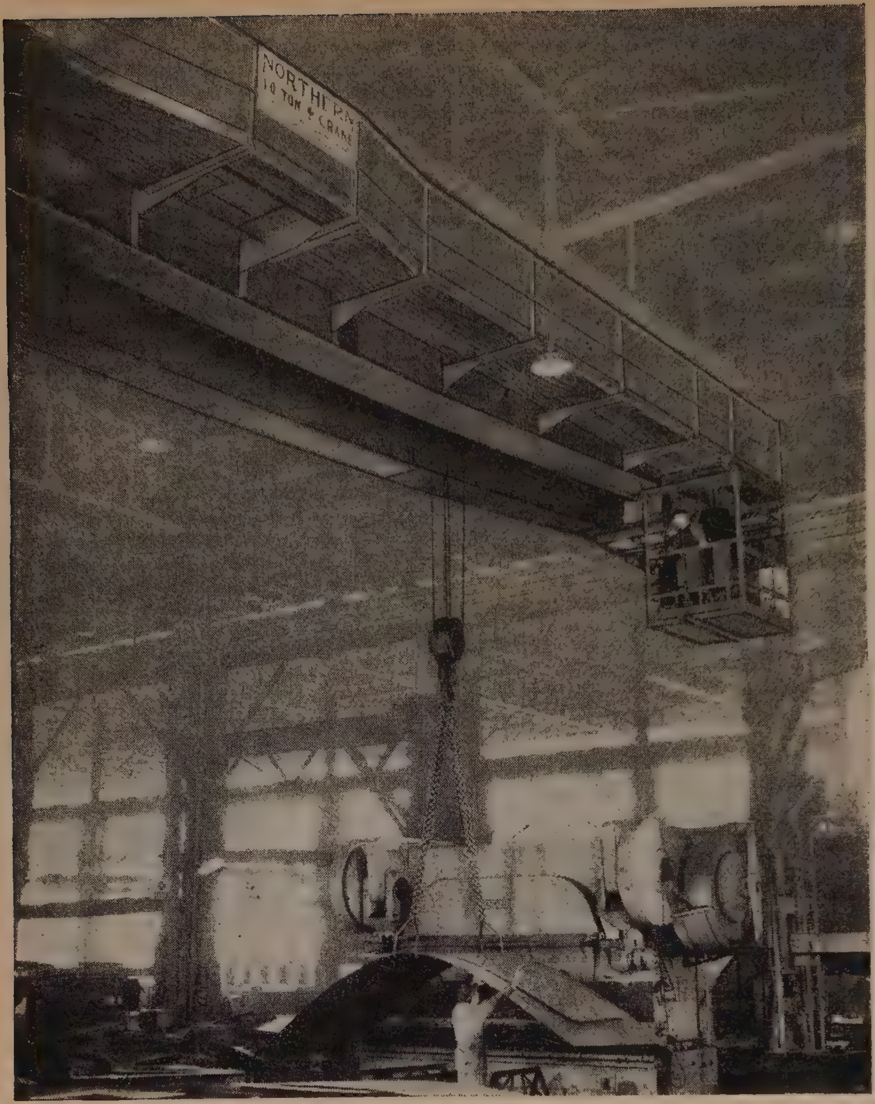

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Canada Planning No Change in System Of Permits for Import

Ottawa

• • • There will be no change i the Canadian Government's allotment import permit system fo 1949, C. D. Howe, Minister of Trad and Commerce announced. M Howe pointed out that manufacturers of such things as motor cars washing machines, and other consumer goods will be able to impor American made parts, chiefly o steel and other metals, to the sam value as in 1948.

However, he stated, they ma earn an "export bonus" in 1949 i they can show an increase in thei sales abroad during that year ove and above their exports during th basic period—November 1946 t October, 1947.

The Minister also stated that provision is being made for holders o allotment permits to claim as an addition to their 1949 allotments an reasonable balance unspent durin 1948. Any unclaimed export bonu earned up to and including Dec. 31 1948, also may be included in th carryover to next year. Alternately consideration will be given to charging excess imports during 1948 t the 1949 allotment permits.

Arrangements are being completed by the Import Contro Branch, whereby 1949 allotmen permits will be issued during December. This will enable those entitled to a 1949 permit to obtain i without making further applicatio before his present permit has expired. The new permits will be accompanied by a claim form for th unspent remainder of 1948 permits for which claims may be made a any time during 1949.

Blaw-Knox Net Rises

Pittsburgh

• • • Blaw-Knox Co. announce third quarter earnings of $853 506, or 60¢ a share, and net profit for the first 9 months of 1948 o $2,646,675, or $1.88 a share. Thi compares with net profits of $2 224,521, or $1.65 a share, earned i the first 9 months of 1947.

Billings of products and se vices for the first 9 months of 194 amounted to $46,193,330, compared with $39,303,760 in the corresponding 1947 period.

FOLLANSBEE COLD ROLLED STRIP

The uniform quality of FOLLANSBEE COLD ROLLED STRIP, and of all the FOLLANSBEE SPECIALTY STEELS, is the result of rigid production control. FOLLANSBEE COLD ROLLED STRIP complies with the exacting mechanical and metallurgical requirements of production engineers and designers.

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• ELECTRICAL SHEETS • POLISHED BLUE SHEETS • SEAMLESS TERNE ROLL ROOFING

URGENT: *STEEL NEEDS SCRAP—KEEP IT MOVING*

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GENERAL OFFICES, PITTSBURGH 30, PA.

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee.
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America's First Alloy Steel Sling Chain

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See us at Booths 826-827 Material Handling Exposition — Philadelphia — January 10-14

50 British Firms Have Started Branch Plants In Canada Since Wa

Ottawa

• • • **G. D. Mallory,** director o the Industrial Development Div of Dept. of Trade & Commerce stated that about 50 British firm have set up branch plants in Can ada since the end of the war. I all, some 450 British establish ments now are operating branche in this country.

He said that before Britis firms obtain permission to mov to Canada, they had to convinc the British Treasury they woul be able to obtain more Unite States dollars through the sale o Canadian made goods in th United States. They also had t show that security reasons mad it advisable for them to have pilo plants away from their mai plants in the United Kingdom. Th firms had to undertake to pay dividends in Canadian dollars and they had to show that establishment of a Canadian branch would not interfere with the British export program.

Mr. Mallory said he did not know how long the movement of British capital here would continue. Money to establish Canadian plants now is being obtained through the sale of British-owned Canadian securities in the United Kingdom under terms of the 1942 loan. As funds become available through the gradual sale of these securities, the Bank of England allows the export of the corresponding amount of dollars to firms desiring to start businesses in this country.

This supply of capital may be cut off at any time, said Mr. Mallory. However, some insurance companies have indicated they are interested in supplying capital for firms coming to Canada. Most of the branch plants have been established in surplus war plants, but some firms are planning to build their own plants as soon as material and construction costs drop. The plants manufacture a wide variety of goods, ranging from motor cars to dog food and from biscuits to tungsten carbide.

Permanente Metals Shows Big Earnings' Increase

Oakland, Calif.

• • • The Permanente Metals Corp., producer of 20 pct of the nation's primary aluminum, has risen to 12 month sales of $69,605,000 and a current net earning rate of $1 million a month, according to a report issued by Henry J. Kaiser, president.

"(1) Net earnings increased approximately 75 pct for the last fiscal year to a total of $9,244,338. This was at a rate of $3.55 a share, compared to $2.05 for the preceding year, based on 2.6 million shares now outstanding. The increase reflected greater production and efficiency achieved from a longer operating period for new plants and the acquisition of new facilities.

(2) The report for the quarterly period ending Aug. 31 showed Permanente Metals continuing to strengthen its position.

(3) Permanente Metals, turning from war-time production of ships, magnesium, incendiary bomb material, chemicals and refractories, became one of the three producers of primary aluminum in the United States in 1946, at the same time continuing related chemical and refractory divisions.

(4) Approximately $5,000,000 of the company's post war earnings were reinvested in new facilities and improvements, including: $1,000,000 for improvements at the Tacoma plant, $1,200,000 for a dock at Baton Rouge, $1,200,000 for a soda ash plant, $1,000,000 at the rolling mill, and research and testing facilities and explorations for sources of bauxite.

(5) Acquisitions of additional facilities and expansions into other products are under way, representing investments exceeding $4,500,000 already provided for in the public financing.

Brake Shoe Sales Gain

New York

• • • Sales of American Brake Shoe Co. amounted to $87,298,341 during the 9 months ended Sept. 30. Sales in the first 9 months of 1947 were $80,567,427. Sales during the quarter ending Sept. 30 were $29,568,580, against $25,525,764 in the 1947 quarter.

LAMINUM* SHIMS GIVE THE FULL SAVINGS OF SHIM DESIGN!

PRECISION ADJUSTMENTS by simply peeling laminations. No grinding, miking, filing. Machining tolerances are greatly increased because the shim provides for exact fit and takeup.

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PREVENTION OF OIL AND PRESSURE LOSS. Fitted with babbitted lugs, LAMINUM shims will also seal oil in the bearings of high speed pressure-lubricated equipment.

LESS "DOWN TIME" FOR THE USER. The use of LAMINUM provides a permanent adjustment feature to allow for wear and preserve critical accuracy.

Send today for chart illustrating 46 money-saving, time-saving applications, detailed specifications, sample of LAMINUM.

PRECISION STAMPINGS
in any quantity

Let us quote on your *difficult* stamping jobs. Our experience, tools and presses are geared for *close tolerance* production.

*LAMINUM (Reg. U. S. Pat. Off.) shims are solidly bonded laminations of .002 or .003 inch precision gauge brass or steel with a microscopic layer of metallic binder. Cut to your exact specifications.

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THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

LAMINATED SHIM COMPANY, Inc.
3111 Union Street Glenbrook, Conn.

SHIMS SHIM STOCK STAMPINGS AN-COR-LOX NUTS

① AIRCRAFT PRODUCTS: AN Bolts, Nuts, Screws, Studs, Cotters (including Stainless Cotters)

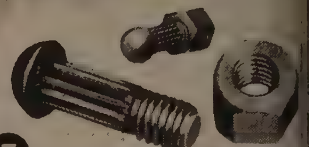
② SEMS—Pre-assembled Screw and Lockwasher units

③ SPECIALTY NUTS, including cone, barrel, plier, oblong, Tri-Slot, half-round

④ BICYCLE PARTS, from axles saddle bolts to chain-adju screws

⑤ FURNITURE BOLTS, Skein Nuts, Cabinet Bed Bolts and Bed Screws

⑥ MILLED STUDS in a full range of sizes



⑦ DARDELET RIVET-BOLTS with th locking thread . . . time saver for steel construction

⑧ WEATHER-TIGHT Bolts—modern fasteners for wood assemblies—eliminate counterboring

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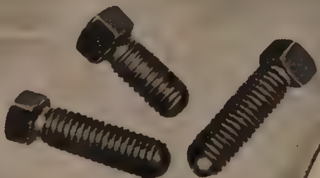
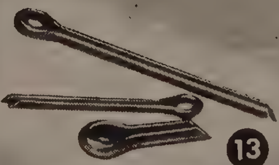
⑩ PLACE BOLTS—for locking assemblies rigidly



⑪ "1035" SET SCREWS of hi-tensile heat-treated steel

⑫ ROAD MACHINERY and other heavy equipment parts—high tensile and alloy fasteners



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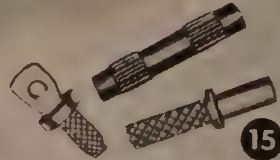

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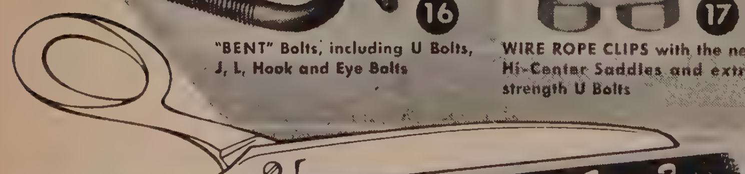

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a hard "hide"... AND TOUGH CLEAN THROUGH!

**LAMSON "1035"
SET SCREWS**

HERE'S THE *Big* DIFFEREN

Ordinary Set Screws

HARD EXTERIOR

**SOFT CORE
MAY TWIST OFF
UNDER HIGH TOR**

Lamson "1035" Set Screws

HARD EXTERIOR

**SET SCREWS
WON'T BREAK
OFF WITH THIS
TOUGH, HEAT
TREATED CORE**

YOU CAN'T JUDGE a set screw by its "skin" alone. You've got to get *below* the surface to determine real set screw quality.

Through a series of special heat treatments, Lamson "1035" Set Screws attain not only a high surface hardness but also a rugged toughness *all the way through.* This results in the ideal combination for a set screw: (1) outer hardness which provides a sharp "biting" surface at the point and (2) internal toughness that will withstand heavy compression and prevent heads or shanks from twisting off under high torque.

For the majority of set screw applications, Lamson "1035's" will perform as satisfactorily as the highest priced alloy product; yet THEY SELL FOR THE SAME PRICE AS COMMON, ORDINARY SET SCREWS.

Lamson "1035" Set Screws are available in a full range of commercial sizes.

So why not get premium quality without paying a premium price? Specify Lamson "1035" Set Screws for *double value:* a hard "hide" and toughness *all the way through!*

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SCREWS • CAP SCREWS •

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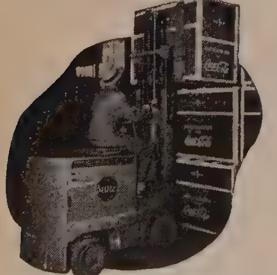
PRODUCTS: Coca-Cola cooler-dispenser, Quaker Oil space heater.
TRUCKS: 6 Baker Fork Trucks—4 2000-lb. and 2 6000-lb. capacity.

Baker 6000-lb. Fork Truck unloading skidded 6-ton packages of sheet steel from gondola cars with chain sling.

Same truck tiering sheet steel packages in storage department.

OPERATION	TRUCKS USED	RESULTS
Unloading steel sheets in 3-ton skidded packages from gondola cars (50 tons per car). Transporting to storage and tiering.	Baker 6000-lb. Fork Trucks	48 man hours cut to 4. Formerly took 6 men 8 hours for unloading alone. Now 2 men safely unload *and store* a carload in 2 hours.
Handling steel sheets from stores into production line.	Baker 6000-lb. Fork Trucks	More man hours saved. Aisles kept clear.
Handling and storing dies for stamping and blanking departments.	Baker 6000-lb. Fork Trucks	Time and storage space saved.
Moving finished products in cases to storage.	Baker 2000-lb. Fork Trucks	Operation speeded 50%. Warehouse capacity increased 50%.
Moving finished products from storage into boxcars.	Baker 2000-lb. Fork Trucks	16 man hours cut to 1. Formerly took 4 men 4 hours to load a car. Now 1 man does it in about 1 hour.



Baker 2000-lb. Fork Truck tiering cases of finished product in warehouse.

Baker 2000-lb. Fork Truck loading cases into boxcars.

The Baker Material Handling Engineer is at your service to help you improve your material handling box score.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Company*
2175 West 25th Street • Cleveland, Ohio
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Baker INDUSTRIAL TRUCKS

Canadian Imports Of Structural Steel Now Need Import Permits

Toronto

• • • **All Canadian** importations of certain types of structural iron and steel from the United States now require import permits, under provision of the Export and Import Permits Act, according to announcement by C. D. Howe, Minister of Trade and Commerce.

The Trade Minister stated that this action has been taken by the Canadian government in connection with the agreement reached with the United States government to limit imports of iron and steel to a maximum of 200,000 tons for the last quarter this year. The new import regulation applies to types of structural iron and steel classified for entry into Canada under tariff items 388, 388a, 388b, 388c, 388d, and include various iron and steel angles, beams, channels, columns, girders, joints, tees, zees, used chiefly in the construction of large buildings and in manufacturing.

Arrangements are being made to issue import permits which provide for the importation, during the balance of this year of specific tonnages of steel where a manufacturer or importer had a standard pattern of importations, while specific or spot importations will be the subject of individual permits.

Mr. Howe stated imports issued, or which may be issued, under the Emergency Exchange Conservation Act, will be honored in connection with the importation of the items covered by the new regulation. All structural steel or iron covered by the regulation which was in continuous transit to Canada on or before Oct. 24, as well as steel from countries other than the United States, will not require an import permit.

Application for new permits will be handled by the Import Permit Branch of the Department of Trade and Commerce. Those importers who require specific or spot supplies of structural steel will be able to obtain the necessary forms from their local customs office.

The most serious effect of the reduced importations of iron and steel for last quarter this year rom the United States will be on he structural steel and steel pipe ndustries of Canada, but practi-ally all steel working industries vill be affected to some extent. The major portion of the struc-ural steel used in Canada, and all he heavier shapes, are imported rom the United States, while ractically all the raw materials ised in the manufacture of steel ipe come from across the line. Vith structural steel cut to 35,000 ons or 34 pct below the last quar-er of 1947, and imports of skelp ut 11 pct, it is readily seen what ffect these reductions will have n the industries referred to bove.

---

ool & Die Men Plan Special Events At Their Annual Meet

leveland

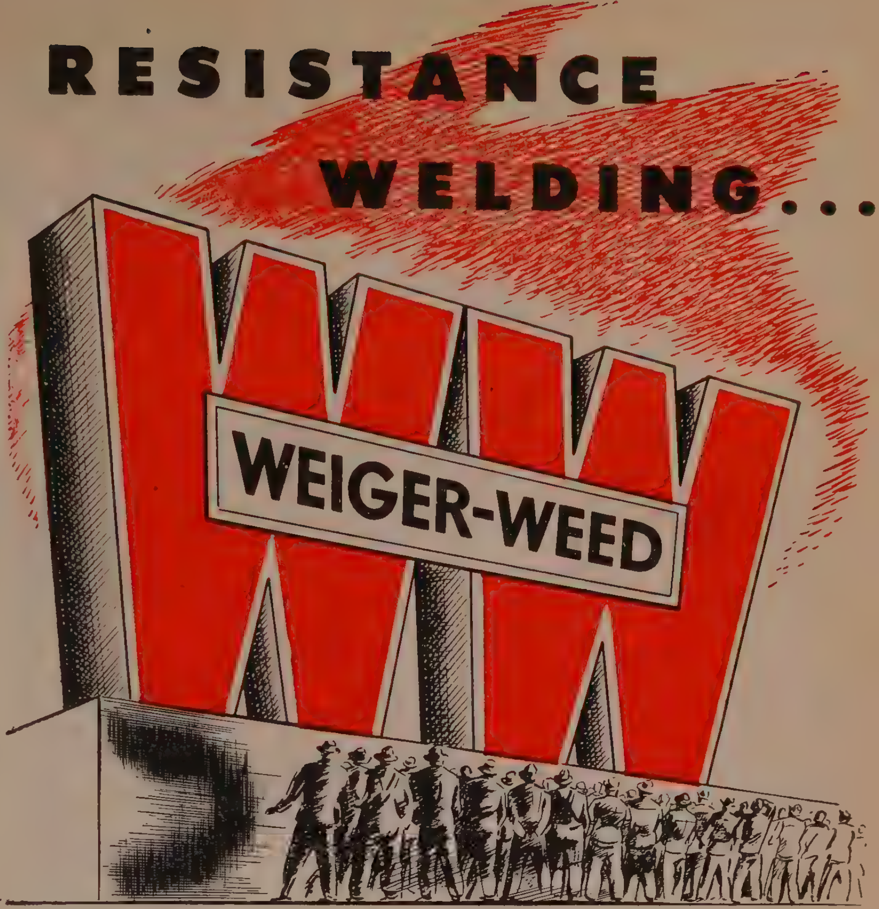
• • **National Tool** & Die Manu-acturers Assn. will hold its an-ual meeting Nov. 14-17, at Hotel chroeder, Milwaukee.

A. G. Bryant, past president, ational Machine Tool Builders' ssn., will be the speaker at the ov. 15 luncheon. Mr. Bryant is resident, Bryant Machinery & ngineering Co., Chicago, and ice-president, Cleereman Machine ool Co., Green Bay, Wis.

Walter C. Ploeser, member of ongress, 12th District, Missouri, nd chairman of the House Small usiness Committee, will address he luncheon session on Tuesday, ov. 16.

Pay Incentives for tool and die hop employees will be the sub-ect of a thorough discussion at he Tuesday afternoon business ession. Robert C. Trundle, op-rating vice president, Trundle ngineering Co., Cleveland, will resent recommendations on in-entive plans, based on studies ade in a typical shop, and mem-ers of the association will tell of heir experiences with incentive ans, both successful and unsuc-essful.

W. R. White, Jr., president, TDMA and vice-president, Mid-estern Tool Co., Chicago, will reside. L. A. Wacker, vice-presi-ent, Sterling Tool & Mfg. Co., ilwaukee, is chairman of the onvention committee.



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Since early 1946, users of resistance welding have come to recognize Weiger-Weed as the progressive company, the company that grows with the industry, that keeps to the front with time-saving and cost-saving developments.

The personnel of Weiger-Weed, both at the plant and in the field, is made up of men who pioneered in the development, application and manufacture of copper base alloys for resistance welding. The knowledge and experience of these men is backed by the resources, facilities and metallurgical experience of the Fansteel research staff, all working together to serve you.

Weiger-Weed places at your service its special engineering and production skills to help your production engineers to obtain more and better welds at lower cost. Write for recommendations on your problems. Weiger-Weed & Company, Division of Fansteel Metallurgical Corporation, 11644 Cloverdale Ave., Detroit 4, Mich.

Weiger-Weed produces high quality spot welding tips, holders, seam welding wheels, and special dies for flash, butt and projection welding. Deliveries are prompt; standard electrodes and holders supplied from stock.

TAKE A TIP from WEIGER-WEED!

Ask for your copy of the Weiger-Weed manual to become familiar with Weiger-Weed products and service, to help you turn out stronger, lighter, more easily fabricated products at lower cost.

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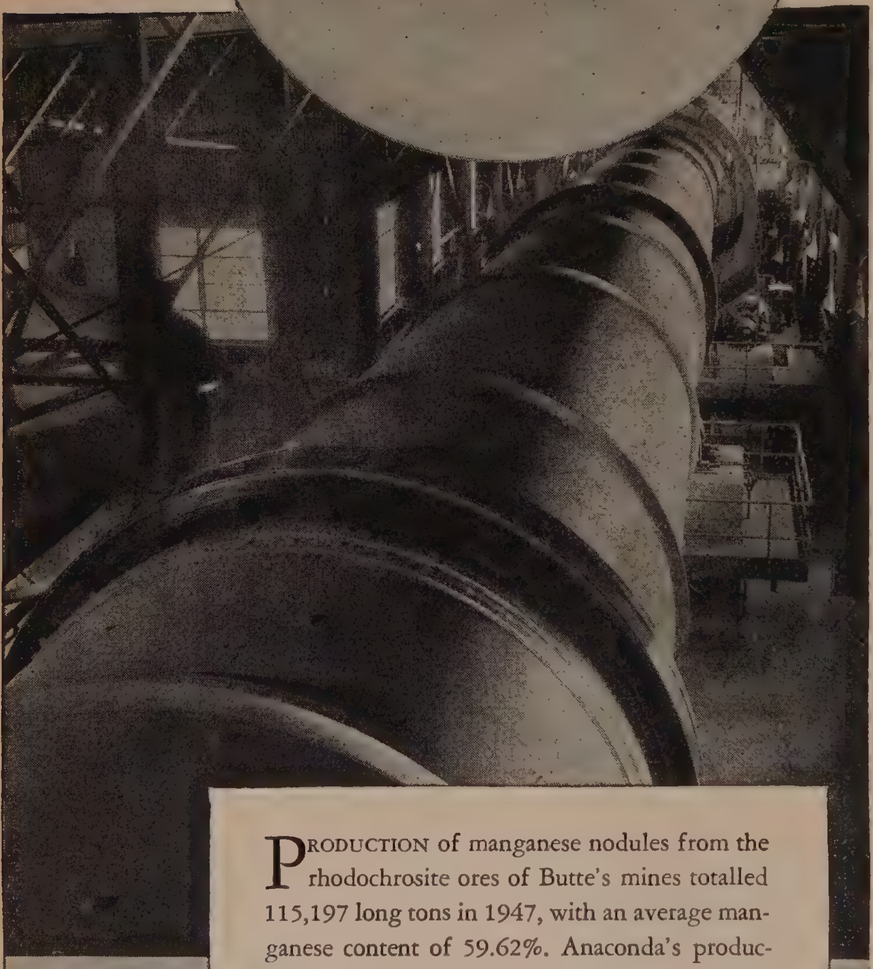

PRODUCTION of manganese nodules from the rhodochrosite ores of Butte's mines totalled 115,197 long tons in 1947, with an average manganese content of 59.62%. Anaconda's production is the principal U.S. source of supply for producers of ferro-manganese and other consumers of metallurgical grade ore.

Illustrated above is the 270-foot kiln at the Anaconda Reduction Works in which the manganese concentrates are sintered at a temperature of 2600° F.

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Advocates 6-Point Plan Of Apprentice Training

Cincinnati

• • • **A six-point plan** for nation-wide expansion of apprentice training to build up the skilled manpower in production plants called for by the national defense program was proposed at the American Federation of Labor Convention, by William F. Patterson, director, Bureau of Apprenticeship, U. S. Dept. of Labor.

Mr. Patterson's recommendations were made in an address before representatives of the Metal Trades Dept. of the AFL meeting in Cincinnati.

Among his recommendations were the formation of national joint labor-management apprenticeship committees in each of the various metal trades; an increase in local joint committees to set up and direct apprenticeship programs in all plants and shops; appointment of full-time directors of apprentice training for area-wide programs; and increased activity in apprenticeship on the part of national employer associations as well as among the labor unions.

Steel Mills Set Records

Pittsburgh

• • • **Production of steel** ingots reached a new all-time high last month in U. S. Steel's Pittsburgh district mills of Carnegie-Illinois Steel Corp. and National Tube Co.

Carnegie-Illinois plants in the Pittsburgh-Youngstown area produced 974,561 net tons. The previous high was 972,696 tons in October 1947. In addition, the company's shipments of steel products reached a new peacetime peak last month.

National Tube mills at McKeesport, Pa., and Lorain, O., chalked up 270,193 net tons of ingots, almost 10,000 more than the former record of 260,563 tons in September 1944. The tube company also set an all-time blooming mill record of 224,821 tons, compared with 220,065 tons in October 1941.

In addition to these company-wide records, 28 all-time plant records were made in mills of these U. S. Steel subsidiaries at McKeesport, Duquesne, Homestead, Dravosburg, Johnstown, Youngstown, and Lorain.

Machinability Starts Here

• A heat of Wisconsin steel pours into the ladle where it is Sulfite-Treated. That means it will be far more machinable than ordinary steel. *And*—physical properties remain completely satisfactory.

Solve your machining problems with Wisconsin's magic metal—Sulfite-Treated Steel. Check your requirements with our sales and metallurgical departments.

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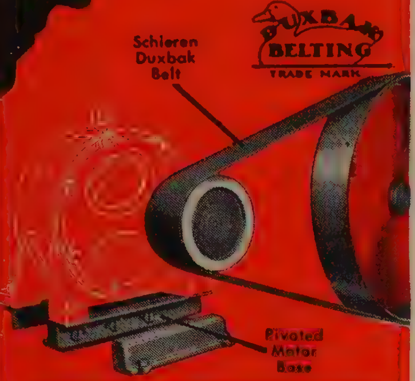
WISCONSIN SULFITE-TREATED STEEL

Have you looked into this New, Low-Maintenance Drive?



This new drive saves you maintenance dollars because *it protects itself* against belt and bearing abuse. Furthermore, it has the capacity, at all times, to transmit the total output of the motor.

Here's how it works.

THE PIVOTED BASE GIVES YOU AUTOMATIC TENSION CONTROL

With the pivoted motor base you can predetermine how much belt tension you'll need to handle peak loads. You set the base; letting a part of the motor weight lean into the belt to give you the proper tension. From then on, the drive automatically maintains that tension despite all variations in load. This eliminates guesswork and keeps belt and bearing wear to a minimum.

THE SCHIEREN DUXBAK BELT PROVIDES SHOCK ABSORBING ABILITY, FULL-FRICTION PULLEY GRIP, LONG LIFE

The Schieren Duxbak belt does its part in this new, low-maintenance drive team by soaking up shock. This high quality belt has a slow, self-adjusting resiliency that protects bearings by cushioning sudden loads.

This belt's live, dynamic grip and pull transmits more power, with less maintenance.

Write for details on this modern short center drive.

SC-32

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Leather Belting Leather Packings Leather Specialties

Accounts for Less of The Nation's Total Business

New York

• • • The number of small businesses in this country today, per thousand of population, is as large as at any time in our history and numerically there is no downward trend in sight, according to A. D. H. Kaplan, economist.

This does not rule out the probability that the next few years will see a weeding out among small businesses that mushroomed during the war and postwar sellers' market.

While small business has maintained its strength in numbers, it has lost some ground in the proportion it does of the nation's business. Three main factors will affect its future vitality, according to Kaplan: first and foremost, improved management; also greater availability of equity capital and an improved long range program of federal taxation.

In reviewing the present state of small business, Kaplan points to its importance for a healthy free enterprise economy and for our democratic society. In 1939, small business represented the source of 11 million jobs. If it is to contribute its future share to high productivity and employment, we should look to small business for 14 million jobs.

Allis-Chalmers Earnings

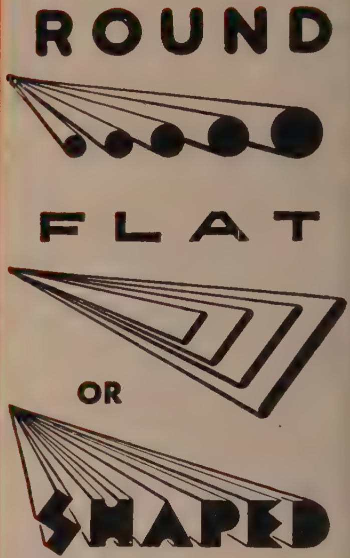
Milwaukee

• • • Allis-Chalmers Mfg. Co. on Nov. 2 announced net earnings for the third quarter of this year to be $3,562,854, equal to $1.30 a share of common stock after preferred dividend requirements of $292,873.

Net earnings for the first 9 months of this year were $9,869,-512 or $3.58 a share of common stock after preferred dividend requirements were taken.

Billings for the third quarter of 1948 amounted to $78,998,158 compared with $57,643,339 for the third quarter of 1947. Unfilled orders on the books as of Sept. 30 amounted to $165,506,027 as compared with $160,000,746 on Sept. 30, 1947. In considering the unfilled order figures, it should be remembered that tractor orders as handled by this company are not booked until the tractors are shipped.

PAGE Stainless Steel WIRE



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TRADE MARK

In Business for Your Safety

riticizes Tactics of Aluminum Producers In Acquiring Scrap

hicago

• • **Carl H. Burton,** secretary of e Aluminum Research Institute, iticized the activities of primary oducers and fabricators of uminum in their methods of ac- iiring scrap. He charged that the tivities of these producers had fected the stability of the sec- ndary aluminum industry. This tion, Mr. Burton declared, has ntributed to rising prices and ay markets, and has served to vert the regular flow of alumi- im scrap from the smelters.

Mr. Burton made this attack in 1 address before the national nvention of the American Die asting Institute in Chicago re- ntly. As a result of this action primary producers and fabri- tors, the speaker told the group, e casters, along with other cast- g operators, are confronted with substantial decrease in the nount of metal available. He arned that the aluminum smelt- g industry, together with 3000 nintegrated foundries would not bmit "to being squeezed into significance without retaliation."

The speaker declared that rep- sentatives of the producers are vising their customers to return eir processing scrap so they may t more sheet aluminum. The eaker declared that this indi- tes an attitude of absolute in- ference to the casting industry d its customers. He charged at aluminum fabricators and ers of wrought shapes, either ectly or through scrap brokers d dealers, are purchasing scrap send to producers and fabri- tors in an effort to get increased ocations.

Such deals, the speaker de- red, were vicious. He continued at unless these activities are pped, it will drain off the bulk the metal supply to die casters. e speaker predicted that the ondary aluminum supply for xt year will fall sharply because the scrap buying activities of mary producers. Primary pro- ction next year, Mr. Burton esti- ted, will be 1.2 billion lb, or the ne as 1948. Conservatively, sec- lary production should be 35 pct the primary output. The speak-

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● You've got a crane with hook or magnet anywhere you want it around your yard exactly when you want it—when a Roustabout is on the job. Fast, powerful, this mobile load-hustler gives you low cost materials handling outdoors all around your plant to match your indoor efficiency. It keeps things organized, on the move, prevents costly delays—no waiting for crews from other jobs. Built for years of overwork—ball-bearing boom turntable, all gears in oil. Capacities to 7½ tons—it's the answer to your yard problem. For complete facts . . . write to **Dept. D-6.**

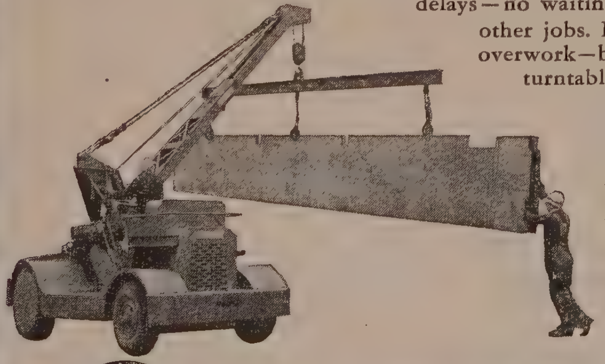

Photo courtesy of Industrial Power Division, International Harvester Company

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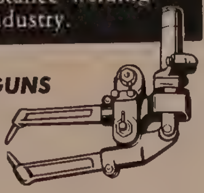

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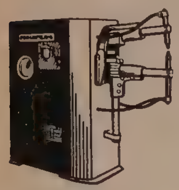
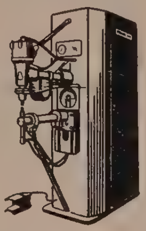
57000 varieties on one chassis alone, through interchangeable jaw extensions and points. **Bulletin No. 402**



ROCKER ARM WELDERS

For all kinds of light to medium duty jobs. An up-to-the-minute "triple threat": real "beef", real speed, and real adaptability. **Bulletin No. 702**



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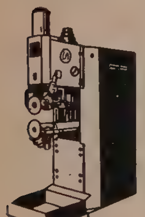

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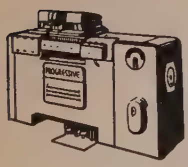
ROLLER HEAD PRESS WELDERS

For either projection or spot welding. Here, too, the roller head speeds follow-up—gives better welds. Rigid? Take a look at the frame in **Bulletin No. 603**



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***Plus* SPECIAL MACHINES**

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er told the group that this would mean approximately 420 million lb of secondary production in 1949. "However," he continued, "it would appear that the established ratio against primary production will not apply in 1949.

Scrap Men Elect Officers

• • • At a recent meeting of the Northern Ohio chapter of the Institute of Scrap Iron & Steel Inc., all officers were re-elected with the exception of Mr. Monroe Zipp, who has been replaced by Mr. Myron J. Urdang, of The A. Shaw Co., Cleveland, as secretary.

Mr. Jack Levand, Luria Bros. & Co. Inc., Cleveland, is president; Mr. Joseph B. Horwitz, Joseph B. Horwitz Co., Cleveland, vice president; Mr. I. B. Bennett, I. A. Barnett Co., Barberton, second vice president, Mr. Jack Oettinger, Tyroler Iron & Steel Co., Cleveland, treasurer; and Mr. Myron J. Urdang, The A. Shaw Co., Cleveland, secretary.

Those elected to the executive committee are: Abner L. Cohen, The M. Cohen & Son Co., Cleveland, chairman; James Kulka, Kulka Steel & Equipment Co., Alliance; Paul H. Hamel, The By-Products Iron & Steel Corp., Cleveland; Morris Kline, State Metals & Steel Co., Canton; A. Knofsky, Warren Scrap Iron & Metal Co., Warren; Harry A. Lederer, Lederer Iron & Steel Co., Cleveland; Lewis Miller, Columbia Iron & Metal Co., Cleveland; S. H. Schachtel, The Philip W. Frieder Division, Luria Steel & Trading Corp., Cleveland; Browne A. Shapero, The Max Friedman Co., Cleveland; and Raymond Wilkoff, Apex Steel Supply Division, S. Wilkoff & Sons Co., Cleveland.

Postwar Payroll Record

Seattle

• • • **Boeing's payroll,** hit the 20,000 mark last week, and the company announced that it was seeking at least 2000 more men for factory work. This is the highest payroll the company has had in its post-war years, and also its biggest peacetime payroll for the Seattle plant.

The increase swells Boeing's monthly payroll to $6,400,000 and the yearly payroll to $77 million. At present the firm is working on a $300 million backlog.

COMMON SENSE

COMMON SENSE in the shop would seem to call for careful cutting fluid application, because oil that improves one operation may not be right for something different. *There just isn't any "one shot" cutting fluid that can do a large percentage of all jobs!* Consider all the variables—the wide variety of speeds, feeds, materials, tolerance and finish requirements encountered in machining operations in one shop. Those are the considerations that make it economical in the long run to be sure the cutting fluid you use is scientifically correct. "On-the-job" tests help you determine what cutting oil qualities are needed, and may even result in a decrease in the number of oils now used. It is plain common sense to call in cutting oil experts . . . people with a sound background of practical experience who can be relied upon to recommend the right cutting fluid for the job.

—Chip

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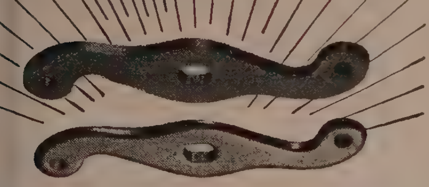
REPORTS . . . (NAME ON FILE)

"The cost of finishing 11,000 crank plates by hand involves 268 hours at $1.18 per hour for a total of $316.00.
"The cost of finishing the same by Roto-Finish involves 138 hours at 30c per hour or a total of $41.00. The net saving is $275.00."



nretouched illustration shows crank plate for fishing el; above, before Roto-Finish deburring and finishing; elow, after Roto-Finishing.

Such savings are possible in your finishg department, too! See how Roto-Finish roduces a semi-lustrous surface uniformly n one or a thousand pieces; how it handles ecision work. Send sample die castings, ampings, machined parts, forgings for ocessing. Include finished part for guide. o obligation! THE STURGIS PRODUCTS CO.,
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Porcelain Enamelers Review Developments Within Their Industry

Urbana, Ill.

• • • **Attendance surpassed** all previous Porcelain Enamel Institute Forums as enamelers gathered at the 10th annual meeting recently at the University of Illinois to hear technical papers on problems and new developments in enameling. A lively interest was shown in the proceedings by approximately 250 representatives from enameling plants.

Increased interest on the part of the porcelain enamel industry in recent years in annual PEI forums has been due in part to the strenuous efforts of the institute to publicize porcelain enamel to offset inroads made by the new synthetic finishes. This aspect was discussed during the address of welcome by M. L. Enger, Dean, College of Engineering and C. D. Clawson, president of PEI and president of Ferro Enamel Corp.

Highlighting the subjects discussed this year was a panel discussion on the application of cover coats directly on steel. Papers in this group discussed titanium enamel, a relative newcomer with superior characteristics; titanium enameling steel which does not warp during firing; and low temperature enamels and their application. Papers describing applications and new developments in ceramic coatings and enamels for military purposes including jet engines and naval equipment also caused considerable interest.

The first paper by D. R. Goetchius, Ferro Enamel Corp., reviewed titanium enamel developments with a discussion of general properties. Commercial use of this enamel started in 1945 and this paper outlined progress and improvement since that time. With titanium enamel, thinner coats with better bonding combined with high resistance to chemical attack and good workability characteristics are claimed. This discussion was followed by a paper on the application of titanium enamels by Harold Wilson, Vitreous Steel Products Co.

In the panel discussion on application of cover coats directly on steel was a discussion of special steels and their preparation for enameling by Frank R. Porter, Ceramic Engineer, Inland Steel Co.

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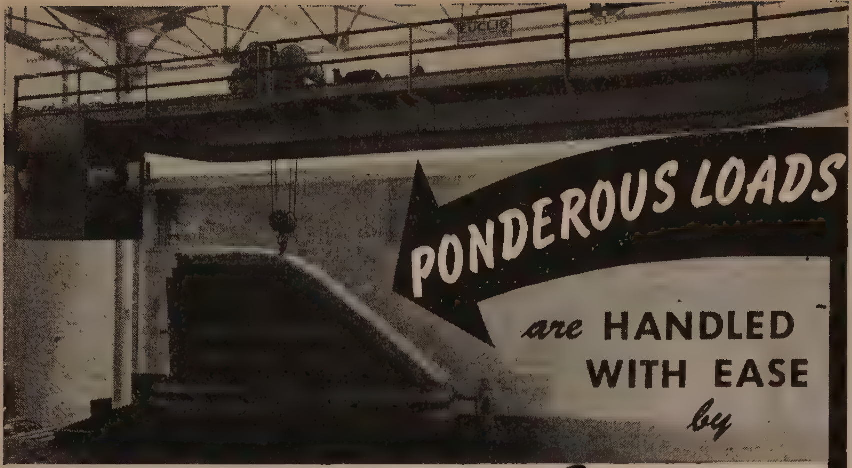

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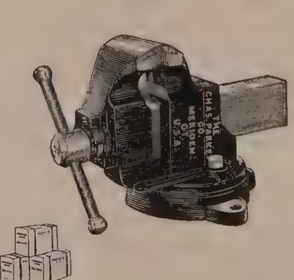

Inland manufactures titanium steel which is said to eliminate warping when firing high temperature enamels.

Two papers on 1500°F type of enamels included "Shop Processing of Titanium Enamels Direct to Titanium Steel" by John L. Lannan, Westinghouse Electric Corp., and "Pickle and Millroom Practice and Procedure for Application of Titanium Enamel Direct to Titanium Steels" by John C. Swartz, also of Westinghouse.

These were followed by a discussion on the application of zirconium and other types of enamels by M. E. McHardy, Hussman Refrigerator Co. Mr. McHardy stated that the introduction of titanium steel had been a big step forward towards solving the industry's goal of reducing warpage, enamel thickness, and process defects.

"Controlling Outgoing Quality of Manufactured Products," a paper by Waldo W. Higgins of A. O. Smith Corp., caused considerable interest as did a discussion on the control of liquid and airborne wastes from porcelain enameling by H. S. Kline, Frigidaire Div., General Motors Corp. Since the Water Pollution Control Act was passed in June, waste treatment has become a major headache in the enameling industry. Mr. Higgins outlined several methods for treating pickle wastes.

Two other papers in this group were "Personnel Safety and Health Hazards in The Enamel Plant" by Russell Frank, Ferro Enamel Corp., and "Budgeting Expenses in the Enamel Plant" by C. S. Pearce, Secretary, American Ceramic Society.

Special design racks for use in continuous furnaces were described by A. Rasmussen, Fahralloy Co., in a paper on the design, construction and maintenance of burning tool equipment. This was followed by "Survey of Drying Practices in the Porcelain Enamel Industry" by George N. Tuttle, Benjamin Electric Co.

A paper which caused considerable interest and discussion described common defects occurring in processing and how to repair them. This has always been a ticklish problem and it was evident from the questions asked that many methods are currently used with varying degrees of success. The paper was presented by John L.

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Results of investigations by the Army and Navy in the application of ceramic coatings to withstand high heat in jet engines and corrosion in sea water gave considerable insight into the use of porcelain enamels as an engineering material of the future. Although most of this work is still in the experimental stage, Major R. A. Jones, Air Materiel Command. USAF, predicted that ceramic-coated metals may be used to conserve strategic materials in his paper, "Application of Ceramic Coatings to Aircraft Power Plant Construction."

A primary requirement in Naval service is the development of a means of applying porcelain enamel locally without furnaces. Forrest R. Nagely and J. R. Chilcote, Bureau of Ships, U. S. Navy, discussed research work on porcelain enamel applications and described a method of flame spraying in the repair of ceramic coatings in their paper on the development of enamel coatings for shipboard service.

A progress report on porcelain enamel research at the National Bureau of Standards was presented by Allen C. Francisco, National Bureau of Standards. At the annual forum banquet R. R. Trubey, Baltimore Porcelain Steel Corp., described a private enterprise profit sharing system which has been highly successful at his plant and others.

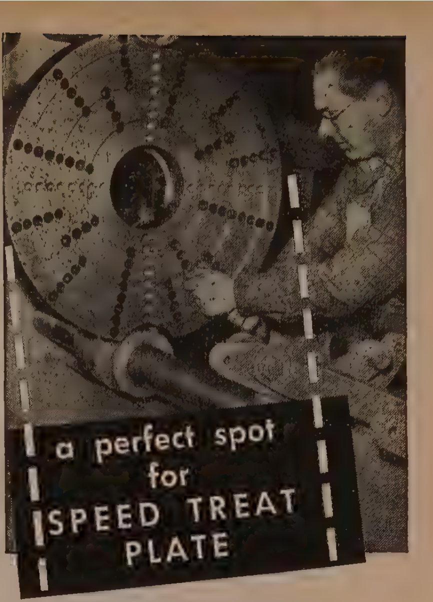
Strike Idleness Trends Continue Moving Down

Washington

• • • **Despite a recent** rash of labor disputes, strike idleness trends continue downward. Fewer workers were involved in new strikes during August than in any month since February, Bureau of Labor Statistics reveal.

To date this year, only one out of each 30 workers went on strike at one time or another, the average striker losing 10 days of work. For the same period last year, the figures are one out of 23 workers and 15 days off the job.

Although 335 new strikes began during August, BLS says, most of them were relatively small. Largest was the International Harvester Co. stoppage, involving some 25,000 workers.



to reduce time . . . expense . . . tool wear

The free-machining characteristics of Holliday Speed Treat plate saved considerable time and money on this heavy machining job. Made by the Rheem Manufacturing Company, Stockton, Calif., this back-up plate for a boiler inspection press was machined from 3½" Speed Treat plate. Work included step machining, drilling of eighty-eight 25/32" holes . . . and the drilling and tapping of sixteen ⅝" holes. When you have a similar job . . . savings of better than 35% in machining costs can be effected through the use of Holliday Speed Treat (.45% carbon) or Speed Case (.20% carbon) Steel Plate.

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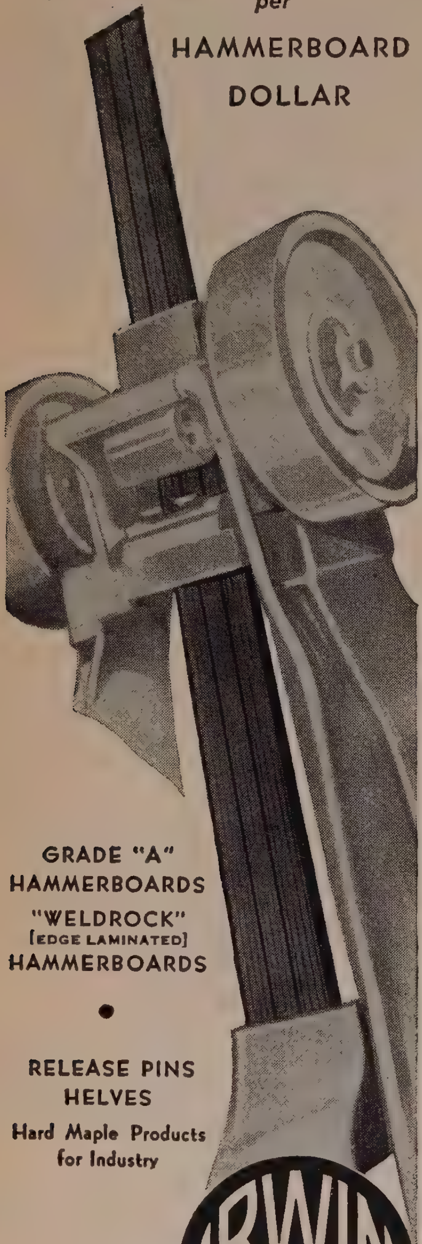
HAMMERBOARD
DOLLAR



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[EDGE LAMINATED]
HAMMERBOARDS

●

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Government Must Tell Businessmen What Can And Can Not Be Done

Chicago

• • • **Senator Homer Capehart,** speaking to the Chicago Assn. of Commerce at a luncheon held here recently declared that the time has come when government agencies must spell out to businessmen exactly what can and what cannot be done. He told the meeting that he had never heard so many "buts" as when questioning FTC lawyers as to the meaning of the Cement Case decision which outlawed multiple basing point selling.

The proponents of exclusive f.o.b. pricing are largely economists the senator said. "They believe we would have a more perfect economic structure if all goods were sold on an f.o.b. mill basis. I am not now prepared to say they are wrong. I will continue to have an open mind on the subject until I have heard all possible views."

The Senator declared that the reorganization of American busin
on an economic basis of univer
f.o.b. mill pricing may produc
more perfect economy, but a mat
of such magnitude that will cha
the economic structure of the co
try should not be put into eff
except at the direction of congr
He declared, "It is not only
right of Congress but their obli
tion to decide what should be
public policy and put it into la

The senator outlined the ti
table of the Capehart Committ
activities in regard to their inve
gation of the Cement Case decisi
He told the group that public he
ings will start Nov. 9 and they h
to finish the hearings by the end
January next year. After preli
nary hearings the committee v
hear from government lawye
They will then hear from busin
men who will tell the commit
how the law thus far has effec
their business.

It is planned that they will h
from both buyers and sellers
about 20 basic commodities. T
first witnesses will be from t

This is how STROM BALLS are born

A heading machine cutting sections from heated steel rods and compressing them in a die to a rough spherical shape.

The steel is carefully chosen and inspected, even before it gets to the heading machine. After being "born" here, balls are carefully "brought up," through a long series of grinding and lapping operations, to the unbelievably high standards of finish, sphericity and precision which have made Strom Metal Balls the standard of Industry. Strom Steel Ball Co., 1850 South 54th Avenue, Cicero 50, Illinois.

Strom BALLS Serve Industry

Largest Independent and Exclusive Metal Ball Manufacturer

eel, beet sugar and cement indus-
ies. The committee will also hear
e testimony of the various cham-
rs of commerce around the coun-
 and will then hear from econ-
ists and members of the com-
ssion.

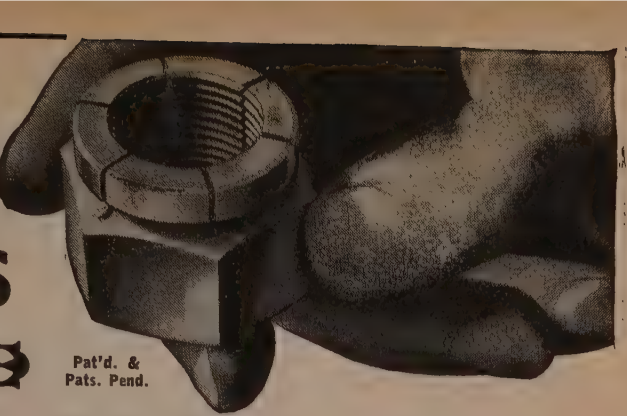
Senator Capehart said that they
uld listen to three of those econ-
ists as well as economists from
ner departments of the govern-
ent and also economists of the
nmittee's own choice. The com-
ttee has appointed an advisory
uncil of 47 industrialists to aid
finding the answer to the present
4 question. These members in-
de businessmen from all sections
the country, many of which rep-
sent small business.

The senator said, "This council
at liberty to reach any conclu-
n and follow any course in mak-
 its study which it thinks proper
d beneficial." After all hearings
 completed the committee will
ke its recommendation to Con-
ess.

The senator declared, "We can-
 permit any pricing policy to be
 law of the land which will pre-
t the small businesses of the
ntry from continuing, hinder
ir growth, or impair their ef-
ts to compete with larger com-
itors. We must determine when,
ver, it is to the best interests of
 national economy to deny any
er the right to compete for any
iness in any distant market,
en he can do so only by absorb-
 all or part of the freight to get
that market."

mmediately following Senator
pehart's talk William Simon, gen-
l counsel of the Senate Trade
icies Committee, outlined for the
mbers of the Chicago Assn. of
nmerce and Industry, "The legal
ues arising out of the decision
the Cement Case." Mr. Simon
iewed the past history of the
leral Trade Commission and
ved rather conclusively that the
C charges against industry have
itually been that of price dis-
mination based on the mill net
ory. He emphatically declared
t the FTC's prime interest has
 been one of conspiracy charges
inst industry but the commis-
n's pet theory of "mill net" has
ays been present behind the
kescreen of conspiracy charges.

ASK FOR SAMPLES



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SELF-LOCKING NUTS

The one-piece, all-metal, resilient "Flexloc" is becoming widely accepted, because it is processed to have an exceptionally uniform torque, and because it is a stop, a lock and a plain nut all in one. All its threads are "live" and load-carrying; "Flexloc" accommodates itself to a wide range of thread tolerances, and can be used over and over again without losing much of its torque . . . is not affected by temperatures commonly met within the industrial field of Mechanical Engineering . . . and being a "stop" nut, it stays locked in any position on a threaded member . . . and last, but not least—it won't shake loose!

The *Thin* "Flexloc" has become very popular because its *tensile* is so high and the space it occupies so small.

Sizes from #6 to 2" in diameter—in "regular" and "thin" types—in NC and NF thread series. Write for *"Flexloc" Catalog.*

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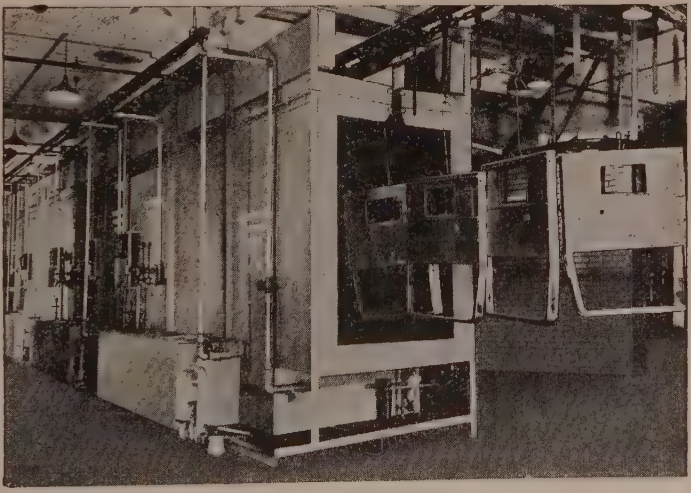

Cab doors for AUTOCAR Trucks being automatically cleaned, phosphate coated and dried in a METALWASH Machine.

Photo Courtesy of AUTOCAR CO. Ardmore, Penna.

This METALWASH phosphate coating machine provides an ideal surface for a lasting paint finish on truck body parts. Cleaning and phosphating are entirely uniform since the cycle is automatically controlled. Continuous operation, built around the plant conveyor line, eliminates handling problems. Let METALWASH engineering solve your metal cleaning, chemical treating and drying problems.

METALWASH MACHINERY CORP.
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CASTINGS
CAN BE
EXPENSIVE

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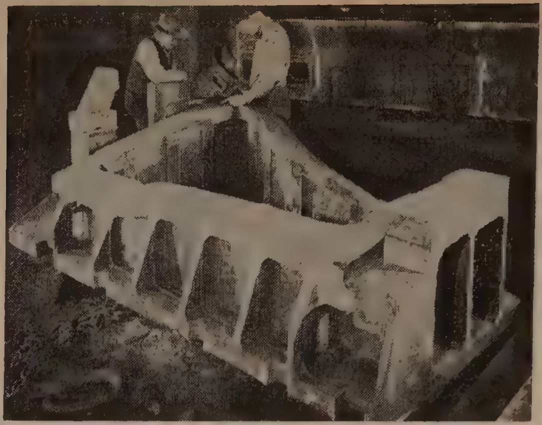

Compared to the expense of machining this quarter panel, the cost of the casting is trivial. If a defect appeared after many hours of machine time had been spent on such a job, much more than the cost of the casting would be lost.

This doesn't mean you have to pay considerably more for sound, machinable castings. In fact, when you get that kind of castings from us, they probably won't cost you anything additional except the freight.

You'd be surprised to know how many customers at a distance are coming to us for gray iron, alloy, and *Strenes Metal* castings to save machining cost and grief. It's because they have learned by experience that it pays to get castings that don't show up blowholes, cold shuts, hard spots, cracks, and sponginess in the course of machining.

We do the same class of work on job castings as on *Strenes Metal* cast dies. That may sound like a broad statement, but we can prove it. If you want the proof, write or phone us.

THE ADVANCE FOUNDRY CO., DAYTON 3, OHIO

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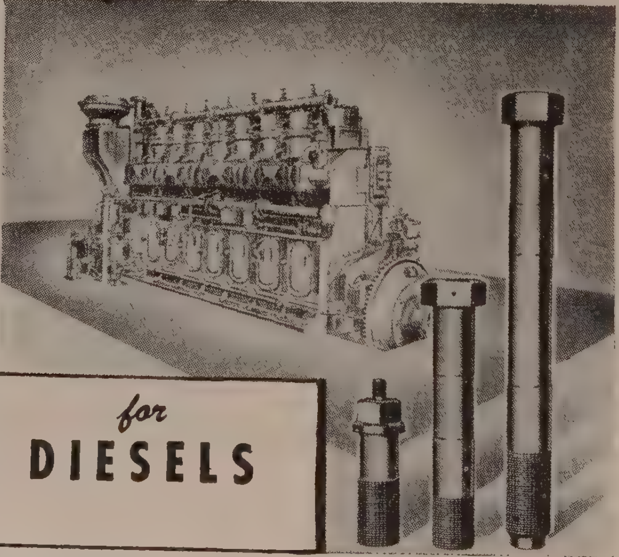
CASTINGS

STRENES METAL
ALLOY GRAY IRON
GRAY IRON

ERIE SPECIAL BOLTING
FOR HEAVY MACHINERY

FOR over 30 years ERIE has specialized in the manufacture of *high quality bolting*. We use the very latest equipment for heat treating, machining, grinding and threading. We are certain that we can produce better bolting at a saving to you because we are specialists—send us your bolting specification for our estimate.



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Steelwright to the Nation

STUDS • BOLTS • NUTS ∼∼ ALLOYS • STAINLESS • CARBON • BRONZE

Develops New Rivet Studs That Prevent Corrosio

Cleveland

• • • **Nelson Stud Welding Di**
Morton-Gregory Corp., has gon
into volume production on a ne
type of composite aluminum an
mild steel rivet stud, which ove
comes the corrosion problem usu
ally encountered when aluminu
roofing and siding have been s
cured with steel plated fastener

Similar in its overall appearanc
to the regular steel Rivweld riv
studs, the new stud consists of
mild steel female stud in which
cross-shaped insert of aluminu
has been so fitted that there
no room for collection of moistur
thus relieving the electrolyt
problem.

With mild steel in the flux-fille
end of the stud, which is secure
to steel purlins, struts or girt
and aluminum in the upper por
tions of the stud which come i
contact with the aluminum shee
there is no opportunity for electr
lytic action at any point.

Nelson has also developed
new aluminum-surfaced neopren
washer for use in conjunction wit
the composite stud.

Five Foundrymen Honore

Cleveland

• • • **Gray Iron Founders' Societ**
at its 20th annual meeting in A
lantic City honored five prominen
gray iron foundrymen for outstan
ing service to the society and th
gray iron foundry industry.

Arthur E. Hageboeck, executiv
vice president, Frank Foundrie
Inc., Moline, Ill., received the firs
gold medal award of the associa
tion, together with a parchmen
scroll for his contributions to th
general welfare of the industry an
his accomplishments in establish
ing foundry cost groups through
out the country.

Other recipients of illuminated
commemorative scrolls were: How
ard A. Stockwell, treasurer, Ba
bour Stockwell Co., Cambridge
Mass., for outstanding service t
the society which he served a
president during 1947 and 1948
John M. Price, president, Ferr
Machine & Foundry Co., Clevelan
for his exceptional leadership i

nnection with the formation and
nancing of the Foundry Educa-
onal Foundation.
Also Arthur J. Tuscany for his
ears of service as the society's first
eneral administrative officer, and
hilip Frankel for his wise leader-
ip and sound counsel

ailroad Uses Infra-Red Light in Inspecting Parts

altimore

• • **Infra-red light**—or "black
ght," as it is commonly called—
as been put to work by the Balti-
ore and Ohio Railroad to add to
ilroad safety. The infra-red rays
e now being employed to inspect
e axles of locomotives, tenders
d cars, according to A. K. Gallo-
ay, general superintendent of mo-
ve power and equipment for the
ad.

In the past, such an inspection
as required manual handling of
e heavy axle and has taken much
me. The new automatic device
rmits an axle to be thoroughly
spected in less than 3 min.

The inspection device employs
patented process known by the
me of "magnaglow." It has been
stalled in the B & O's wheel shop
Glenwood, near Pittsburgh, Pa.
& O shop engineers, under the
rection of F. B. Rykoskey, super-
sor of shops, developed the ac-
ssories that make it possible for
e axles to be handled automat-
ally and rapidly during the
plication of the magnaglow
ocess.

The axle to be inspected is first
eaned to remove any accumula-
on of grease and dirt. It is then
aced on a bracket which feeds it
gravity onto several rollers. As
e axle revolves slowly on these
llers, an oil solution containing
y particles of iron is sprayed
on it. Starting at each end of
e axle, two electro-magnetic
ils move slowly over it toward
e center.

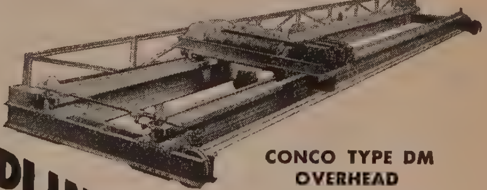
Meanwhile, the infra-red light
played on the axle. This causes
oil solution to glow with a
osphorescent light wherever
ere is a small flaw or crack. This
w rotation, combined with the
w sideward movement of the
ls, allows the inspector to check
of the axle without any manual
ndling. As the inspection is com-
ted, the axle is discharged from
rollers onto a conveyor, the
ole cycle being automatic.

PRODUCTION UP...
COSTS DOWN...

If its more production at less cost you're looking for consult us about Brosius Auto Floor Manipulators—dual purpose machines for manipulating forging blanks under hammers and presses and the charging and drawing of heating furnaces.

We also design and manufacture Charging Machines, Goggle Valves, Clay Guns, Cinder Notch Stoppers, Dry Slag Granulating Mills, Flue Dust Conditioners, Coke Testing Tumbling Barrels, Soaking Pit Cover Carriages, Clam Shell Buckets and Automatic Dump Buckets.

Edgar E. BROSIUS Company Inc.
Designers & Manufacturers of Special Equipment for Blast Furnaces & Steel Mills
SHARPSBURG, Pittsburgh (15) PENNSYLVANIA

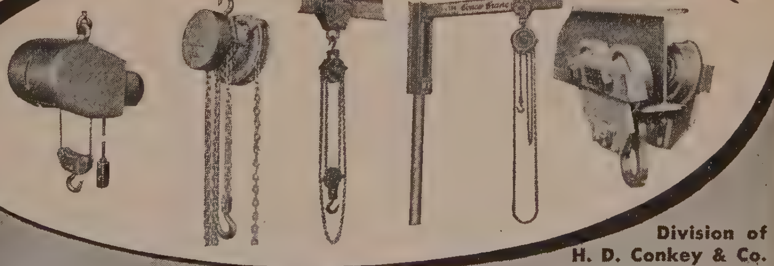


CONCO HANDLING EQUIPMENT

CONCO TYPE DM OVERHEAD ELECTRIC CRANE

● WRITE today for complete information on the CONCO line of hand-powered and electric cranes, hoists and trolleys — a complete line, tried and proven for over twenty years. CONCO engineers are qualified to recommend the right type of handling equipment for faster, more economical production in your shop. Write us now, and take advantage of our long experience in moving more materials, faster and at less cost.

CRANES • HOISTS • TROLLEYS



Division of
H. D. Conkey & Co.
CONCO ENGINEERING WORKS, 15 Grove St., MENDOTA, ILL.

MACHINE TOOLS

. . . News and Market Activitie

Prospects for Immediate Improvement in Sales Not Encouragin

• • • While prospects of immediate improvement in the machine tool sales outlook are practically nonexistent at the moment, according to industry observers, there were signs this week that although major segments of the industry might be damp in spirit, they were keeping their powder dry.

A spokesman for the industry pointed out this week that the Democratic victory at the polls does not alter the outlook for ECA machine tool orders, in fact, it practically guarantees that ECA will be continued. Estimates of what this will mean to the industry in new orders can be had for the asking, but the latest figure is $40 million, and it is believed that first of this business will be placed in December.

An optimistic but somewhat hollow note was also sounded this week in Houston by former Undersecretary of State, W. L. Clayton, father of WAA's Clayton formula, who sharply contradicted Wall St. financiers with the prediction that the Truman administration and a Democratic controlled Congress should be a boon to business.

"I think the financial and industrial interests are wrong in construing that it (the election) will be bad for business," he said. "It seems both constructive and hopeful to place all responsibility in one party and one administration."

In any event, it was evident that the long-slumbering defense program was getting under way. WAA approved this week the lease of two surplus government owned plants to be used for production of military equipment for the Air Force. One plant is located at Johnson City, N. Y., the other in Milwaukee. The Johnson City plant was operated during the war by Remington Rand Co., which produced airplane propellers. The Milwaukee plant was operated during the war by A. O. Smith Corp., for production of airplane landing equipment.

Industry Exporters Feel That Biggest European Market Exists in Germany

o o o

On the foreign sales front, some of the major segments of the industry were actively renewing their contacts with German machine tool dealers, perhaps in anticipation of the development of the active machine tool market that reportedly requires only capital and a little latitude of industrial movement in Germany. It has been firmly alleged by a number of well-informed export sales operatives in the industry that Germany is where the biggest European machine tool market lies and subsequent events tend to emphasize the sagacity of that statement.

In Cleveland, it was reported that earnings of National Acme Co. in the third quarter dropped to $242,437 from $476,442 in the same quarter a year ago. Share earnings declined to 49¢ from 95¢. Nine-month earnings this year were $912,973 or $1.83 a share compared with $1,698,148 or $3.40 in 1947.

Contract tool and die shops report decreasing backlogs, although their physical volume of business is about the same as last year's. The important decline is in new orders, according to trade sources, which are currently less than shipments. Most shops are in position to give the quick deliveries manufacturers are requesting, despite the fact that employment is down somewhat.

As of Sept. 1, members of National Tool & Die Manufacturers' Assn. reported 99 pct of their dollar volume for the corresponding period of 1947. Steel requirements of the tool and die shops are relatively small and they have not been directly affected by the steel shortage, although some producers of die sets have been unable to expand for lack of an historical background with a steel producer.

In Detroit trade sources report a decided down turn in prospective business estimates. There has been a noticeable easing of pressures behind tooling programs fo
the new automatic transmissions
The Saginaw program for Genera
Motors is continuing, but at
slower pace. A Detroit transmission program which was expecte
to open up has turned unexpectedly quiet, according to supplie
sources. Anticipated ordering fo
the new Ford automatic transmission, it is indicated, has not materialized.

Hardest hit in this area hav
been the builders of special machine tools. Some well-established shops, it is now reported
have been forced to make substantial reductions in their staffs because of the lack of orders. Thi
applies to several of the bette
established machine tool builder
here.

There is still some spotty buying by the larger tool and di
shops, but the volume is not large
Up to the present time, there ha
been little buying to replace machine tools now being operated
under lease from the government
It had been expected that much
of this equipment would have t
be replaced within the next
months.

In Philadelphia, Fiat Automobile Works, Turin, Italy, has contracted with the Budd Co. for th
construction of dies, jigs, an
other tools here, according to
statement by Armando Fiorelli
managing director the Fiat Works

Mr. Fiorelli, who is here for th
consummation of the contract
said that the shortage of facilitie
for machine tool production i
Italy and the fact that his firm i
attempting to cooperate under th
Marshall Plan (ECA) by achieving maximum employment an
production as rapidly as possibl
make this step necessary.

Fiat is producing a new 4-cylinder automobile and hopes t
reach an output of 300 cars pe
day by the end of 1949. Fiat ha
built automobile bodies since 1935
using Budd methods under
licensing arrangement, but this i
the first time Budd Co. has buil
tools for the Italian firm.

HALF

p-H control

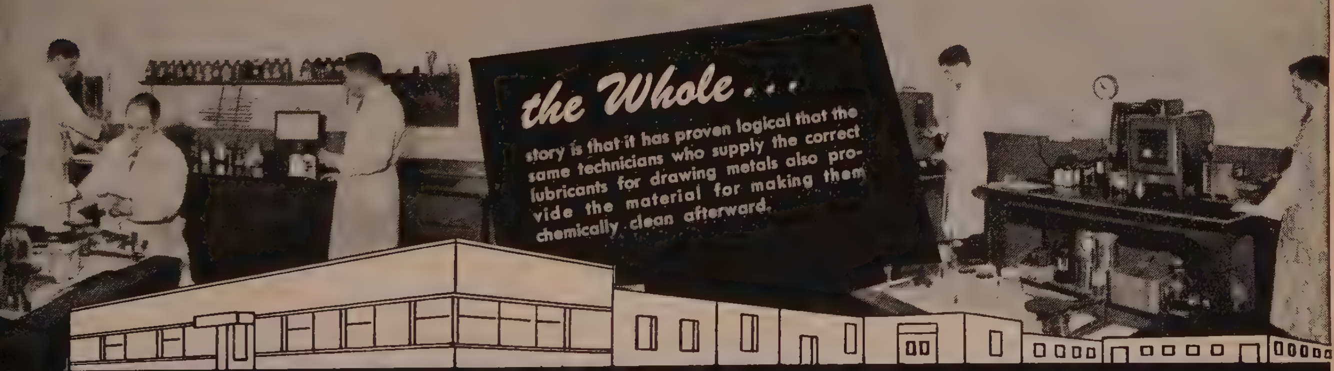
Half of this message has to do with NORTHWEST products and processes for chemically cleaning ferrous and non-ferrous metals preparatory to plating, vitreous enameling, painting, etc., each problem involving a specific programing of one or more of the thirty-five standard NORTHWEST Cleaning Compounds including Electrolytic, Immersion, Solvent, Spray, and Water Wash types . . . the "Lo-Hi" pH process of chemically cleaning metals, preparatory to plating, porcelain enameling, etc., makes practical a control that management can plan on in these departments regardless of the type of metal or soil . . .

the other

HALF

SUPER-DRAW

is concerned with metal forming lubricants developed for ferrous and non-ferrous metals in both pigmented and non-pigmented form . . . SUPERDRAW products are specifically compounded for: 1. Brass and Brass Alloys, 2. Cold Rolled Steel, Enameling Iron, Stainless Steel and Aluminum, 3. Alloys of Steel, Aluminum and Copper . . . SUPERDRAW compounds will handle light, medium, and heavy operations . . . may be applied by brush, roller, spray, or dipping . . . A request on your letterhead will bring a technician to consult you on your drawing and cleaning problems . . .



the Whole . . .

story is that it has proven logical that the same technicians who supply the correct lubricants for drawing metals also provide the material for making them chemically clean afterward.

LO' HI pH

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control — serving you since '32

Note your specific interest on the coupon below and attach to your letterhead. It will bring complete information.

p-H Cleaning control

- Electrolytic ☐
- Immersion ☐
- Solvent ☐
- Spray ☐
- Water Wash (Paint Booth) ☐
- Ferrous ☐ Non-Fers ☐

SUPER-DRAW

Metal Forming Lubes for

- Cold Rolled ☐
- Enameling Iron ☐
- Stainless Steel ☐
- *Special Alloys of:*
- Steel ☐ Brass ☐
- Aluminum ☐
- Pgtd. ☐ Non-Pgtd. ☐

Cadmium Price Raised to $2.00; Producer Raises Zinc 2 Cents

New York

• • • **All producers advanced** the price of cadmium to $2.00 per lb on Monday, an advance of 10¢. The possibility of an increase in cadmium prices was foreseen in industry circles more than a month ago when the demand for the metal pyramided. Anode producers have withdrawn prices for the time being as they are studying the possibility of a need for a larger spread than the 10¢ which has applied in recent months.

An increase of 2¢ per lb in the price of zinc was put into effect by the Eagle Picher Co. on Friday, following an increase of 13.5¢ an hour to its smelter workers. Early this week no other producer had taken action to follow, but those pricing on the weighted average weekly price will obtain an automatic increase. Most other producers are out of the market awaiting further developments. The Joplin concentrates price has been advanced from $98 to $110 a ton. If the increase is adopted generally, the price of Prime Western becomes 17.50¢ East St. Louis. High Grade would become 18.50¢ delivered.

The copper shortage is much more acute now than it has been. The strike of railroad workers at Kennecott's Utah mine was still in effect early this week, causing a loss of domestic production of approximately 25,000 tons a month. There are no compensating factors to offset this lost tonnage. Consumers are desperate and are avidly searching for December tonnage. Producers are unable to cope with the demand. No major or minor producer has taken action to advance the price. However, reports of transactions indicate that prices of 26.50¢ and 27¢ have been paid by consumers.

Desperate Metals Shortage, Government Stockpiling Are Inflationary

○ ○ ○

In the face of these inflationary developments, it is learned that the government intends to proceed with its stockpiling program regardless of the shortages and the impact of stockpiling on prices. Copper producers met last week with Michael Schwarz, Bridgeport Brass Co. vice-president, who has been appointed as a consultant to the Treasury Dept. Procurement Div. to expedite the stockpiling of copper. They learned that there was no alternative to a program setting up specific tonnage objectives for each producer. Some producers who have been buyers of copper to meet the requirements of newly built fabricating facilities also will be required to offer tonnages to the government.

The lead stockpiling program is now being expedited by Irwin H. Cornell, former president of St. Joseph Lead Co., acting as consultant. Stockpiling of zinc will go forward regardless of the tonnages already held in the stockpile, and the present critical demand for the metal. Producers of all three metals recognize that if metal is not offered to the government under the present voluntary program, it will surely result in a strict allocations program.

All factors in the market point to increased zinc and copper prices, but producers are holding back lest general action bring about the imposition of price controls. Competition for copper, brass and aluminum scrap has become acute, causing extreme hardship on customary buyers such as the custom smelters. Copper consumers have entered the scrap market on a large scale because of the shortage of refined metal. They have bid up the price well above what smelters and ingot makers can afford to pay in order to sell at the 23.50¢ market. This scrap is refined on a toll basis with a resultant price well above the market.

Copper cathodes have been sold at 26¢ per lb. With conversion charges, this copper in shape form might reach 28¢. Belgian zinc has been sold in this market at 18.75¢, duty paid.

This week, copper and zinc producers are meeting in Washington with officials of the Dept. of Commerce, Office of International Trade. Although producers are not in receipt of full details of the program, it is known that there is to be an attempt to limit the exports of bonded copper and zinc. No domestic copper or zinc is now being exported. But imported ores and concentrates, refined in this country, are exported under current regulation of OIT. The problem in restricting exports of bonded metal is that such action might result in a reduction of shipments of ores and concentrates into this country.

Nonferrous Metals Prices

	Nov. 10	Nov. 11	Nov. 12	Nov. 13	Nov. 15	Nov. 16
Copper, electro, Conn.	**23.50**	**23.50**	**23.50**	**23.50**	**23.50**	**23.50**
Copper, Lake, Conn.	**23.625**	**23.625**	**23.625**	**23.625**	**23.625**	**23.625**
Tin, Straits, New York	**$1.03**	**$1.03**	**$1.03**	**$1.03**	**$1.03**	**$1.03**
Zinc, East St. Louis	**15.50**	**15.50**	**15.50**	**17.50**	**17.50**	**17.50**
Lead, St. Louis	**21.30**	**21.30**	**21.30**	**21.30**	**21.30**	**21.30**

Heads Cumbustion Dept.

Washington

• • • **Dr. Ernest F. Fiock** has been appointed chief of the newly organized Combustion Section of the National Bureau of Standards. The increasing importance of combustion research, particularly its application to gas turbines and jet engines, has made the formation of a separate section devoted to large-scale research necessary.

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	38.50
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$24.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$52.00
Cadmium, del'd	$2.00
Cobalt, 97-99% (per lb)	$1.65 to $1.72
Copper electro, Conn. Valley	23.50
Copper, lake, Conn. Valley	23.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$110 to $115
Lead, St. Louis	21.30
Lead, New York	21.50
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$75 to $78
Nickel, electro, f.o.b. New York	42.90
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$93 to $96
Silver, New York, cents per oz.	74.25
Tin, Grade A, New York	$1.03
Zinc, East St. Louis	15.50–17.50
Zinc, New York	16.15–18.15
Zirconium copper, 10-12 pct Zr, per lb contained Zr	$12.00

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

85-5-5-5 ingot		
No. 115	21.50*	22.00
No. 120	21.00*	21.50
No. 123	20.50*	21.00
80-10-10 ingot		
No. 305		27.25
No. 315		24.25
88-10-2 ingot		
No. 210		33.00
No. 215		31.00
No. 245	25.75*	25.75
Yellow ingot		
No. 405	17.50*	17.50
Manganese bronze		
No. 421		23.00

* F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	30.50–31.00
0.60 copper, max.	29.75–30.50
Piston alloys (No. 122 type)	25.75–26.25
No. 12 alum. (No. 2 grade)	25.75–26.25
08 alloy	25.75–26.25
95 alloy	25.50–26.00
3 alloy	29.75–30.25
AXS-679	26.50–27.00

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95 pct-95½ pct	28.00–28.50
Grade 2—92 pct-95 pct	27.00–27.50
Grade 3—90 pct-92 pct	25.50–26.00
Grade 4—85 pct-90 pct	25.00–25.50

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	40⅛
Electrodeposited	34⅝
Rolled, oval, straight, delivered	37.34
Ball anodes	38⅜
Brass, 80-20	
Cast, oval, 15 in. or longer	35⅞
Zinc, oval, 99.99	
Ball anodes	
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	
Cadmium	$2.10
ilver 999 fine, rolled, 100 oz. lots, per troy oz, f.o.b. Bridgeport, Conn.	81½

hemicals

(Cents per lb, f.o.b. shipping point)

opper cyanide, 100 lb drum	46.00
opper sulfate, 99.5 crystals, bbls.	9.10
ickel salts, single or double, 100 lb bags, frt. allowed	18.50
ickel chloride, 300 lb bbl.	24.50
ilver cyanide, 100 oz. lots, per oz.	62
odium cyanide, 96 pct domestic 100 lb drums	16.00
inc sulfate, crystals, 22.5 pct, bags	
inc sulfate, 25 pct, granules, bbls. frt. allowed	

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4; 35.1¢ to 66¢; 11 to 13, 36.1¢ to 78¢; 23 to 25, 38.2¢ to $1.07; 35 to 37, 45.7¢ to $1.65; 47 to 49, 67.5¢ to $2.41.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ⅛ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished. ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅝ to 2 in., R317-T4, 36.5¢ to 33.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 32.5¢ to 31.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheet and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft. per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢. 0.065 to 0.082, ⅜ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and shapes		
Hot-rolled	56	45
Cold-drawn	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Extruded Shapes	Rods	Sheets
Copper	36.78	..	37.18
Copper, hot-rolled	....	33.28	....
Copper, drawn	....	34.28	..
Low brass	38.07*	34.85	35.16
Yellow brass	36.76*	33.44	33.75
Red brass	38.55*	35.33	35.64
Naval brass	33.92	32.67	38.61
Leaded brass	....	28.30	....
Commercial bronze	39.29*	36.32	36.63
Manganese bronze	37.51	36.01	42.11
Phosphor bronze, 5 pct	57.80*	56.30	56.05
Muntz metal	33.47	32.22	36.66
Everdur, Herculoy, Olympic, etc.	40.43	40.67	41.73
Nickel silver, 10 pct		46.42	44.20
Architectural bronze		....	32.33

* Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add 1¢ per lb for shipments of 15,000 or more)

	Heavy	Turnings
Copper	21⅛	20⅝
Yellow brass	18	17⅛
Red brass	19¾	19
Commercial bronze	19¾	19
Manganese bronze	17¾	16⅞
Leaded brass rod ends	17¾	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery.)

No. 1 copper wire	20.50–21.00
No. 2 copper wire	19.50–20.00
Light copper	18.50–19.00
Refinery brass	18.50*–18.75*

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer.)

No. 1 copper, wire	19.75
No. 2 copper, wire	18.75
Light copper	17.75
No. 1 composition	16.75–17.00
No. 1 comp. turnings	16.50–16.75
Rolled brass	13.00–13.50
Brass pipe	13.25–13.75
Radiators	14.00
Heavy yellow brass	12.50–12.75

Aluminum

Mixed old cast	16.00–16.50
Mixed old clips	16.25–16.75
Mixed turnings, dry	14.00–14.50
Pots and pans	16.25–16.75
Low copper	18.50–19.00

Dealers' Scrap

(Dealer's buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	18½—19
No. 2 heavy copper and wire	17½—18
Litgh copper	16½—17
Auto radiators (unsweated)	12¼—12¾
No. 1 composition	15 —15½
No. 1 composition turnings	14½—15
Clean red car boxes	12½—13
Cocks and faucets	12¼—12½
Mixed heavy yellow brass	9½—10
Old rolled brass	11¾—12
Brass pipe	12½—13
New soft brass clippings	14½—15
Brass rod ends	12 —12½
No. 1 brass rod turnings	11½—12

Aluminum

Alum. pistons and struts	8½—9
Aluminum crankcases	12 —12½
2S aluminum clippings	16 —16½
Old sheet & utensils	12 —12½
Borings and turnings	6 — 6½
Misc. cast aluminum	12 —12½
Dural clips (24S)	12 —12½

Zinc

New zinc clippings	10½—11
Old zinc	8½— 9
Zinc routings	4½— 5
Old die cast scrap	5 — 5½

Nickel and Monel

Pure nickel clippings	22 —23
Clean nickel turnings	17 —18
Nickel anodes	22 —23
Nickel rod ends	21 —22
New Monel clippings	15½—16½
Clean Monel turnings	11 —12
Old sheet Monel	13 —14
Old Monel castings	10 —11
Inconel clippings	12 —13
Nickel silver clippings, mixed	8 — 8¼
Nickel silver turnings, mixed	7 — 7½

Lead

Soft scrap lead	20 —20½
Battery plates (dry)	13 —13½

Magnesium Alloys

Segregated solids	8 — 9
Castings	4½— 5½

Miscellaneous

Block tin	82 —84
No. 1 pewter	65 —67
No. 1 auto babbitt	51 —53
Mixed common babbitt	20 —20½
Solder joints	22½—23½
Siphon tops	50 —52
Small foundry type	21½—22
Monotype	20½—21
Lino. and stereotype	20 —20½
Electrotype	18½—19
New type shell cuttings	16½—17
Hand picked type shells	7½— 8
Lino. and stereo dross	11½—12
Electro dross	8 —8½

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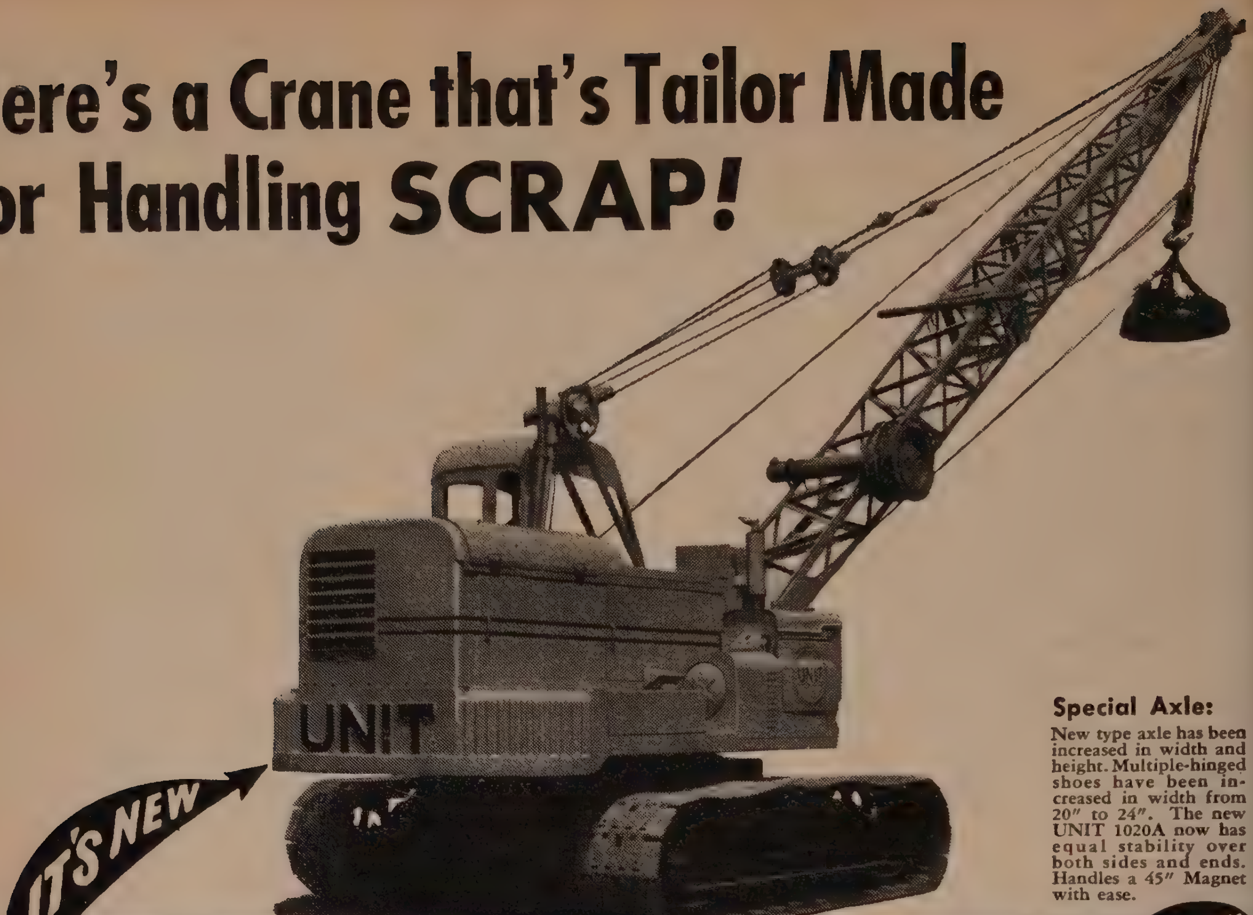

Special Axle:
New type axle has been increased in width and height. Multiple-hinged shoes have been increased in width from 20" to 24". The new UNIT 1020A now has equal stability over both sides and ends. Handles a 45" Magnet with ease.

THE NEWLY DESIGNED UNIT 1020A

With All the Features You Need . . . or Ever Will Need!

- Pendant Boom Suspension . . . boom length can be altered without re-reeving boom hoist cable.
- Throttle Lever is within easy reach of operator . . . positive power and speed control at all times.
- Heavier, air-cooled Double Disc Clutches . . . for smooth performance and easy operation.
- Improved Automatic Traction Brakes with sectional linings which are easily replaced without removing shaft from machine.
- New leak-proof Oil Seals . . . keeps lubricants in . . . and dirt and abrasives out.
- New style foot brakes with self-aligning bearings on brake operating shafts. Wider, self-equalizing brake bands which eliminate dragging or scoring.

Swing Lock Control:
Hand operated swing lock control within easy reach of operator . . . no more stooping, kicking, or leaving cab for this operation.

New Type Magnet Fairlead:
This elevated Fairlead is especially adapted for magnet operation. It equalizes cable contact on two sheaves instead of one, minimizes unnecessary wear.

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Some Cast Grades Advance Sharply

lew York

• • • **Standard mill grades** held teady this week in the major mar- et areas, but cast grades ad- anced sharply in Birmingham nd Buffalo while low phos dipped 1 in Philadelphia to go at $49 o $50.

In Birmingham, cast iron reached he highest quotation in the mar- et's history as No 1 cupola cast dvanced $2 to $70 to $72 a ton, nd cast iron car wheels brought 63 to $64.

Clean auto cast jumped $2.50 in uffalo to go at $69 to $70 while tove plate advanced $1.50 to $66 o $68. It is reported that dealers re giving added attention there o preparation to get top prices or the cast grades.

The market is generally firm nd shipments are moving in fair olume. Mills are still careful on heir inspection procedures but ill take good scrap. Ingot opera- ion continues to hang around 99 ct of capacity and although back- gs are good they must be main- ined.

Some sources in the Chicago istrict report pressure for lower rices while others talk up the arket's strong points. The real tory seems to lie somewhere in etween the two versions. Good rap is still hard to get in that rea and converters are willing to ay premiums. Bundles, however, re moving slower there and nu- erous installations of balers may ffect that market in the near ture.

•

PITTSBURGH—The market showed no ice changes during the past week. okers reported dealer shipments still lling off. This is due to a seasonal drop receipts from the South; a seasonal dency to hold stocks for inventory pur- ses and a dip in receipts from peddlers. ices for foundry grades showed no de- ne though demand from that quarter reported off somewhat. Big steel com- nies are still increasing scrap stocks on ground despite record breaking oper- ng rates. Better quality coke, per- tting a reduction in the proportion of ap to pig iron charged, is said to be reason.

•

HICAGO—Observers here declare that pressure to change going prices is increasing. The mills are acting like they don't need any more scrap, it is a drug on the market, etc. That they would like to play the price of dealer scrap against earmarked is becoming quite evident. Sellers are talking about the winter months, slow flow from their sources, market looks strong, etc. Somewhere in between lies the eventual level. Good scrap is still hard to find. Converters will still pay premiums. However, bundles aren't moving too well—some dealers are looking for conversion business but this usually requires electric furnace bundles. Everybody and his brother has installed balers in recent months **and it will not be surprising** if these particular prices broke a little in the very near future. Conversely one small mill last week was paying $42 a gross ton for clips unbundled.

▪

PHILADELPHIA—The heavy melting market was firm last week at previously quoted prices. Mills are still choosey about shipments and are continuing to reject off-grade shipments. Some brokers report that mills are no longer overly anxious to place orders. There are strengthening influences on the market involved in the car shortage and the longshoremen's strike that went into effect here last week. Low phos grades used in the openhearth were sold $1 lower last week. All other prices were unchanged.

•

CLEVELAND—Shipments to consumers here and in the Valley continue to reflect the seasonal shortage of freight cars, which will probably last until December. The market is quiet, although all grades are in strong demand here and in the Valley except blast furnace. Foundries are inclined to be cautious and will probably remain so for the balance of the month, but good grades of cast are showing strength with mills buying heavy breakable. Recent sheet and strip price increases by mills will probably inspire an effort on the part of some segments of the trade toward another increase in scrap prices.

•

DETROIT—There have been no significant changes in the Detroit scrap market during the past week. Scrap flow has been excellent except where freight car shortages or embargos have interfered with normal movements. Local mills are reported to be comfortable. Some sources have reported indications of softness on cast grades. However, any downward movement in this segment of the market is not yet reflected in local prices. It would not be surprising, however, if recent losses of business by local job foundries and the present lack of activity in Detroit tool and die shops will eventually result in a softening of cast prices.

•

CINCINNATI—Openhearth grades continue strong here in what might be described as a cautious market, both on the part of the brokers and the consumers. Steel foundries are practically out of the market for the time being and other foundries are buying very little. The shortage of freight cars has not, as yet, affected the movement of material in this area although shipments of openhearth grades are holding up. Brokers hint that talk of controls is responsible for the hesitance of some consumers to build up an inventory and are showing some hesitance themselves in bidding the big money for railroad offerings.

▪

NEW YORK—Current price levels are holding firm in this market. Shipments are moving in fair volume and demand is strong although mills are careful in their inspection procedures, especially on bundles. The continued high operating rates and necessity for establishing and maintaining backlogs spur the outlook. As yet, there is no indication that hysteria over controls should exist. What the future will bring forth is another story. The 50¢ drop in chemical borings last week holds in a weak market. Shipments here are down and there are few orders out.

•

BIRMINGHAM—Cast iron has advanced in price here again to reach the highest quotations for that material in this market's history. No. 1 cupola cast, up $2 per ton, is bringing as much as $72. Reflecting substantial inventories at mills, movement of openhearth grades is relatively light. Northern consumers still are refusing to absorb freight charges from Southern points.

•

BOSTON—There has been more stability in the market here, recently, than there had been in a long time and prices show no change. With colder weather on the way, there is some expectation of an increase in scrap demand, but there is no sign of it yet. Prices are pretty near going price levels. Good cast is in demand, and most foundry grades are moving at normal levels.

•

BUFFALO—Standard mill grades held steady in a quiet market, with no break indicated in the stalemate between big consumers and dealers. One major yard operator said October receipts were about half of September's tonnage, and so far November was no better. Dealers are giving closer attention to preparation to get top prices, such as $51 for 2-ft foundry steel, $70 for clean auto blocks and $64 for short rail. On the other hand, one of the leading consumers is accepting unprepared openhearth steel at $3.50 below the No. 2 price and unbundled sheets at $4 under. This week will mark the end of the heavy canal movement from the seaboard. A 5000-ton cargo is due over the coming weekend by lake freighter from Duluth.

•

ST. LOUIS—The movement of scrap iron to the St. Louis industrial district has fallen off within the last 10 days, as material is not being gathered in the rural districts. Receipts are below the melt, but mills are said to have an average of 45 days supply in piles. Steel cars axles and cast iron car wheels are up sharply; otherwise prices are unchanged.

IRON AND STEEL SCRAP PRICES

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to	$43.00
RR. hvy. melting	43.50 to	44.00
No. 2 hvy. melting	42.50 to	43.00
RR. scrap rails	58.00 to	59.00
Rails 2 ft and under	62.00 to	62.50
No. 1 comp'd bundles	42.50 to	43.00
Hand bdld. new shts.	42.50 to	43.00
Hvy. axle turn.	45.50 to	46.50
Hvy. steel forge turn.	45.50 to	46.50
Mach. shop turn.	37.50 to	38.00
Shoveling turn.	39.50 to	40.00
Mixed bor. and turn.	37.50 to	38.00
Cast iron borings	39.50 to	40.00
No. 1 mach. cast	69.50 to	70.50
Mixed yard cast	64.00 to	65.00
Hvy. breakable cast.	61.00 to	62.00
Malleable	76.00 to	77.00
RR. knuck. and cup.	57.75 to	58.75
RR. coil springs	57.75 to	58.75
RR. leaf springs	57.75 to	58.75
Rolled steel wheels	57.75 to	58.75
Low phos.	49.00 to	50.00

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.50 to	$42.00
No. 2 hvy. melting	41.50 to	42.00
No. 1 bundles	41.50 to	42.00
No. 2 dealers' bundles	41.50 to	42.00
Bundled mach. shop turn.	39.50 to	40.00
Galv. bundles	39.50 to	40.00
Mach. shop turn.	36.50 to	37.00
Short shov. turn.	38.50 to	39.00
Cast iron borings	37.50 to	38.00
Mix. borings and turn.	36.50 to	37.00
Low phos. hvy. forge	51.00 to	52.00
Low phos. plates	49.00 to	50.00
No. 1 RR. hvy. melt.	44.25 to	50.00
Rerolling rails	69.00 to	71.00
Miscellaneous rails	65.00 to	66.00
Angles & splice bars	58.00 to	59.00
Locomotive tires, cut	59.00 to	60.00
Cut bolster & side frames	52.00 to	55.00
Standard stl. car axles	82.00 to	83.00
No. 3 steel wheels	53.00 to	54.00
Couplers and knuckles	54.00 to	55.00
Rails, 2 ft and under	62.50 to	65.00
Malleable	83.00 to	84.00
No. 1 mach. cast.	72.00 to	73.00
No. 1 agricul. cast.	63.00 to	64.00
Heavy breakable cast.	62.00 to	64.00
RR. grate bars	60.00 to	64.00
Cast iron brake shoes	60.00 to	61.00
Cast iron car wheels	65.00 to	66.00

CINCINNATI

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$40.00 to	$41.00
No. 2 hvy. melting	40.00 to	41.00
No. 1 bundles	40.00 to	41.00
No. 2 bundles	40.00 to	41.00
Mach. shop turn.	35.00 to	36.00
Shoveling turn.	37.00 to	38.00
Cast iron borings	36.00 to	37.00
Mixed bor. & turn.	35.00 to	36.00
Low phos., 18 in. under	48.00 to	49.00
No. 1 cupola cast.	65.00 to	66.00
Hvy breakable cast	59.00 to	60.00
Rails 18 in. and under	61.00 to	63.00
Rails random length	56.00 to	57.00
Drop broken	69.00 to	70.00

BOSTON

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$34.40 to	$36.40
No. 2 hvy. melting	....	34.40
Nos. 1 and 2 bundles	....	34.40
Bushelings	....	34.40
Shoveling turn.	....	31.40
Machine shop turn.	....	29.40
Mixed bor. and turn.	....	29.40
Cl'n cast chem. bor.	37.50 to	38.50
No. 1 machinery cast.	64.00 to	65.00
No. 2 machinery cast.	59.00 to	60.00
Heavy breakable cast.	53.50 to	54.50
Stove plate	56.00 to	57.00

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	....	$38.00
No. 2 hvy. melting	....	38.00
No. 1 bundles	....	38.00
New busheling	....	38.00
Flashings	....	38.00
Mach. shop turn.	$32.50 to	33.00
Machinery cast	63.00 to	65.00
Mixed yard cast	57.00 to	58.00
Shoveling turn.	34.50 to	35.00
Cast iron borings	33.50 to	34.00
Mixed bor. & turn.	34.50 to	35.00
Low phos. plate	42.50 to	43.00
Heavy breakable cast.	53.00 to	57.00
Stove plate	57.00 to	58.00
Automotive cast.	64.00 to	66.00

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$44.00 to	$45.00
No. 2 hvy. melting	41.00 to	41.50
No. 1 bundles	44.00 to	45.00
No. 2 bundles	41.00 to	41.50
Mach. shop turn.	37.00 to	38.00
Shoveling turn.	38.50 to	39.00
Mixed bor. and turn.	36.75 to	37.25
Clean cast chemical bor.	43.00 to	45.00
No. 1 machinery cast.	66.00 to	67.00
No. 1 mixed yard cast.	61.00 to	62.00
Hvy. breakable cast	62.00 to	63.00
Clean auto cast.	65.00 to	66.00
Hvy. axle forge turn.	46.00 to	47.00
Low phos. plate, openhearth	49.00 to	50.00
Low phos., electric furnace	51.00 to	52.00
Low phos. bundles	48.00 to	49.00
RR. steel wheels	54.00 to	55.00
RR. coil springs	54.00 to	55.00
RR. malleable	80.00 to	82.00
Cast iron carwheels	68.00 to	70.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$43.00 to	$44.00
No. 2 hvy. melting	40.00 to	41.00
Bundled sheets	40.00 to	41.00
Mach. shop turn.	35.00 to	36.00
Shoveling turnings	37.00 to	38.00
Locomotive tires, uncut	47.00 to	48.00
Mis. std. sec. rails	57.00 to	58.00
Steel angle bars	54.00 to	55.00
Rails 3 ft and under	60.00 to	62.00
RR. steel springs	49.00 to	50.00
Steel car axles	72.00 to	73.00
Brake shoes	59.00 to	60.00
Malleable	75.00 to	77.00
Cast iron car wheels	63.00 to	64.00
No. 1 machinery cast.	66.00 to	67.00
Hvy. breakable cast.	60.00 to	61.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	....	$40.00
No. 2 hvy. melting	....	40.00
No. 2 bundles	....	40.00
No. 1 bunsheling	....	40.00
Long turnings	$32.00 to	33.00
Shoveling turnings	35.00 to	36.00
Cast iron borings	....	29.50
Bar crops and plate	44.00 to	45.00
Structural and plate	44.00 to	45.00
No. 1 cupola cast.	70.00 to	72.00
Stove plate	65.00 to	67.00
No. 1 RR. hvy. melt.	....	41.00
Steel axles	51.00 to	52.00
Scrap rails	44.00 to	45.00
Rerolling rails	65.00 to	67.00
Angles & splice bars	53.00 to	54.00
Rails 3 ft & under	53.00 to	54.00
Cast iron carwheels	63.00 to	64.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to	$43.00
No. 2 hvy. melting	42.50 to	43.00
Mach. shop turn.	37.50 to	38.00
Short shov. turn.	39.00 to	40.00
Cast iron borings	38.00 to	39.00
Low phos.	47.50 to	48.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$38.50 to	$39.00
No. 2 hvy. melting	....	37.00
No. 2 bundles	....	37.00
Mach. shop turn.	31.50 to	32.00
Mixed bor. & turn.	31.50 to	32.00
Shoveling turnings	33.50 to	34.00
Machinery cast.	59.00 to	60.00
Mixed yard cast	57.00 to	58.00
Heavy breakable cast.	56.00 to	57.00
Charging box cast.	56.00 to	57.00
Unstrp. motor blks.	53.50 to	54.50
Cl'n cast chem. bor.	38.00 to	39.00

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$47.00 to	$49.0
No. 2 hvy. melting	41.75 to	42.2
No. 1 bundles	41.75 to	42.2
No. 2 bundles	41.75 to	42.2
No. 1 busheling	41.75 to	42.2
Mach. shop turn.	36.75 to	37.2
Shoveling turn.	38.75 to	39.2
Cast iron borings	37.75 to	38.2
Mixed bor. and turn.	36.75 to	37.2
Clean auto. cast.	69.00 to	70.0
Mixed cupola cast.	66.00 to	68.0
Stove plate	66.00 to	68.0
RR. malleable	70.00 to	75.0
Small indus. malleable	47.00 to	49.0
Low phos. plate	48.00 to	50.0
Scrap rails	....	58.0
Rails 3 ft & under	63.00 to	64.0
RR. steel wheels	56.00 to	58.0
RR. coil & leaf spgs.	56.00 to	58.0
RR. knuckles & coup.	56.00 to	58.0

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to	$42.5
No. 2 hvy. melting	42.00 to	42.5
No. 1 bundles	42.00 to	42.5
No. 1 busheling	42.00 to	42.5
Drop forge flashings	42.00 to	42.5
Mach. shop turn.	37.00 to	37.5
Shoveling turn.	38.50 to	39.5
Steel axle turn.	42.00 to	42.5
Cast iron borings	37.50 to	38.5
Mixed bor. & turn.	36.50 to	37.5
Low phos. 2 ft and under	47.00 to	47.5
No. 1 machinery cast.	73.00 to	75.0
Malleable	79.00 to	81.0
RR. cast.	76.00 to	78.0
Railroad grate bars	60.00 to	62.0
Stove plate	61.00 to	63.0
RR. hvy. melting	43.00 to	43.5
Rails 3 ft and under	63.50 to	64.5
Rails 18 in. and under	65.00 to	66.0

SAN FRANCISCO

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	....	$27.5
No. 2 hvy. melting	....	27.5
No. 2 bales	....	27.5
No. 3 bales	....	24.5
Mach. shop turn.	...	18.0
Elec. fur. 1 ft under	$40.00 to	42.0
No. 1 cupola cast.	58.00 to	60.0
RR. hvy. melting	....	28.5
Rails	....	29.0

LOS ANGELES

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	....	$27.5
No. 2 hvy. melting	..	27.5
No. 1 bales		27.5
No. 2 bales	..	27.5
No. 3 bales	..	24.5
Mach. shop turn.	...	20.0
Elec. fur. 1 ft under	$40.00 to	42.0
No. 1 cupola cast.	58.00 to	68.0
RR. hvy. melting	....	28.5

SEATTLE

Per gross ton delivered to consumer:

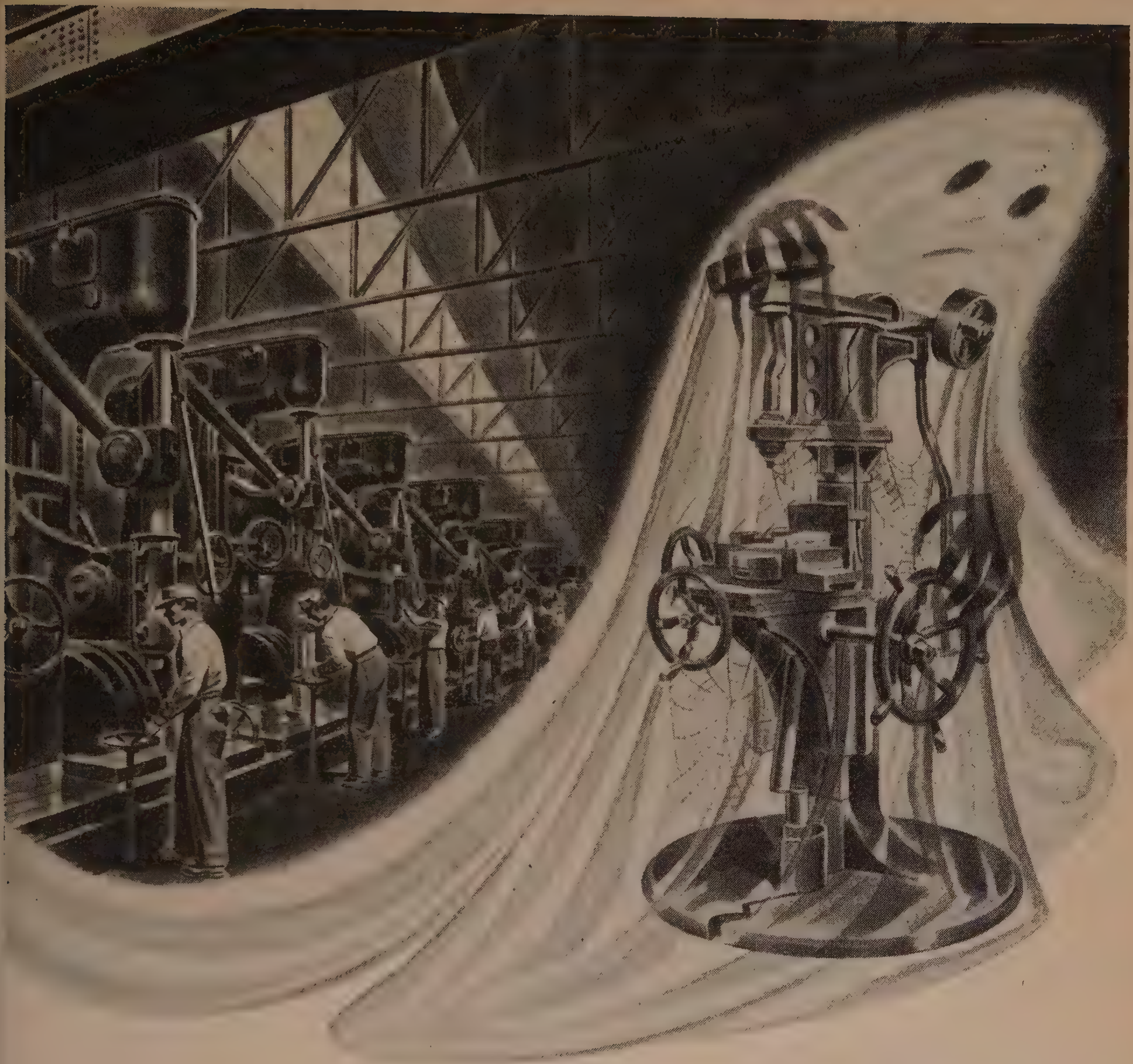
No. 1 & No. 2 hvy. melt.	$27.50 to	$30.0
Elec. fur. 1 ft and under	40.00 to	42.0
No. 1 cupola cast.	50.00 to	54.0
RR. hvy. melting	30.00 to	33.0

HAMILTON, ONT.

Per gross ton delivered to consumer:
Cast grades f.o.b. shipping point:

Heavy melting		$23.00
No. 1 bundles		23.00
No. 2 bundles		22.50
Mechanical bundles		21.00
Mixed steel scrap		19.00
Mixed borings and turnings		17.00
Rails, remelting		23.00
Rails, rerolling		26.00
Bushelings		17.50
Bushelings, new fact, prop'd		21.00
Bushelings, new fact, unprop'd		16.00
Short steel turnings		17.00
No. 1 cast	$48.00 to	50.00
No. 2 cast	44.00 to	45.00

*Ceiling Price



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It is likely that in almost every plant there are obsolete and worn out machines. These "ghosts" can serve a far more useful purpose if sold as scrap. You can speed the delivery of your new machinery by disposing of your obsolete equipment now. 26 million tons of scrap will be needed this year. Industry must help itself!

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices . .

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Nov. 16, 1948	Nov. 9, 1948	Oct. 19, 1948	Nov. 18, 1947
Hot-rolled sheets	3.26	3.26	3.26	2.80
Cold-rolled sheets	4.00	4.00	4.00	3.55
Galvanized sheets (10 ga)	4.40	4.40	4.40	3.95
Hot-rolled strip	3.265	3.265	3.265	2.80
Cold-rolled strip	4.063	4.063	4.063	3.55
Plates	3.42	3.42	3.42	2.95
Plates wrought iron	7.85	7.85	7.85	6.85
Stains C-R strip (No. 302)	33.25	33.25	33.25	30.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$6.80	$6.80	$6.80	$5.75
Tinplate, electro (0.50 lb)	6.00	6.00	6.00	5.05
Special coated mfg. ternes	5.90	5.90	5.90	4.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.37	3.37	3.37	2.90
Cold-finished bars	3.995	3.995	3.995	3.55
Alloy bars	3.75	3.75	3.75	3.30
Structural shapes	3.25	3.25	3.25	2.80
Stainless bars (No. 302)	28.50	28.50	28.50	26.00
Wrought iron bars	9.50	9.50	9.50	7.15
Wire: (cents per pound)				
Bright wire	4.256	4.256	4.256	3.55
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$2.75
Light rails	3.55	3.55	3.55	3.10
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$45.00†
Slabs, rerolling	52.00	52.00	52.00	45.00†
Forging billets	61.00	61.00	61.00	55.00†
Alloy blooms, billets, slabs	63.00	63.00	63.00	66.00†
Wire rod and Skelp: (cents per pound)				
Wire rods	3.619	3.619	3.619	2.80
Skelp	3.25	3.25	3.25	2.60

† Gross ton

Pig Iron: (per gross ton)	Nov. 16, 1948	Nov. 9, 1948	Oct. 19, 1948	Nov. 18, 1947
No. 2, foundry, Phila.	$51.56	$51.56	$51.56	$40.97
No. 2, Valley furnace	46.50	46.50	46.50	36.50
No. 2, Southern Cin'ti	49.47	49.47	49.47	40.24
No. 2, Birmingham	43.38	43.38	43.38	34.88
No. 2, foundry, Chicago†	46.00	46.00	46.00	36.00
Basic del'd Philadelphia	50.76	50.76	50.76	40.47
Basic, Valley furnace	46.00	46.00	46.00	36.00
Malleable, Chicago†	46.50	46.50	46.50	36.50
Malleable, Valley	46.50	46.50	46.50	36.50
Charcoal, Chicago	73.78	73.78	73.78	56.04
Ferromanganese‡	161.71	161.71	161.71	145.00

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† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy page.

Scrap (per gross ton)	Nov. 16, 1948	Nov. 9, 1948	Oct. 19, 1948	Nov. 18, 1947
Heavy melt'g steel, P'gh.	$42.75	$42.75	$42.75	$42.50
Heavy melt'g steel, Phila.	44.50	44.50	45.00	42.50
Heavy melt'g steel, Ch'go	41.75	41.75	41.75	38.75
No. 1, hy. comp. sh't, Det.	38.00	38.00	38.00	34.75
Low phos. Young'n	47.75	47.75	47.75	46.25
No. 1, cast, Pittsburgh	70.00	70.00	70.00	51.50
No. 1, cast, Philadelphia	66.50	66.50	65.50	53.00
No. 1, cast, Chicago	72.50	72.50	69.50	52.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.00	$15.00	$15.00	$12.50
Foundry coke, prompt	17.00	17.00	17.00	14.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	23.50	23.50	23.50	21.50
Copper, Lake Conn.	23.625	23.625	23.625	21.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	80.00
Zinc, East St. Louis	**17.50**	15.50	15.00	10.50
Lead, St. Louis	21.30	21.30	19.30	14.80
Aluminum, virgin	17.00	17.00	17.00	15.00
Nickel, electrolytic	42.90	42.90	42.90	37.67
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	38.50	33.00

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
Nov. 16, 1948	3.75628¢ per lb.	$46.82 per gross ton	$43.00 per gross ton
One week ago	3.75628¢ per lb.	$46.82 per gross ton	$43.00 per gross ton
One month ago	3.75628¢ per lb.	$46.82 per gross ton	$43.16 per gross ton
One year ago	3.19541¢ per lb.	$37.06 per gross ton	$41.25 per gross ton

	HIGH	LOW	HIGH	LOW	HIGH	LOW
1948	3.75700¢ July 27	3.22566¢ Jan. 1	$46.82 Oct. 12	$39.58 Jan. 6	$43.16 July 27	$39.75 Mar. 9
1947	3.19541¢ Oct. 7	2.87118¢ Jan. 7	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.83599¢ Dec. 31	2.54490¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.44104¢ Oct. 2	2.54490¢ Jan. 2	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.29176¢	2.29176¢	23.61	23.61	$19.17	$19.17
1942	2.28249¢	2.28249¢	23.61	23.61	19.17	19.17
1941	2.43078¢	2.43078¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	$19.17 Apr. 10
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.26689¢ May 16	22.61 Sept. 19	20.61 Sept. 12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	23.25 Mar. 9	20.25 Feb. 16	21.92 Mar. 30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug. 11	17.75 Dec. 21	12.67 June 8
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8	18.84 Nov 5	17.83 May 14	13.42 Dec. 10	10.33 Apr. 29
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2	17.90 May 1	16.90 Jan. 27	13.00 Mar. 13	9.50 Sept. 25
1933	1.95578¢ Oct. 3	1.75836¢ May 2	16.90 Dec. 5	13.56 Jan. 3	12.25 Aug. 8	6.75 Jan. 3
1932	1.89196¢ July 5	1.83901¢ Mar. 1	14.81 Jan. 5	13.56 Dec. 6	8.50 Jan. 12	6.43 July 5
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29	15.90 Jan. 6	14.79 Dec. 15	11.33 Jan. 6	8.50 Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9	18.21 Jan. 7	15.90 Dec. 16	15.00 Feb. 18	11.25 Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29	18.71 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

Based on averages for basic iron at valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Commercial quality sheet grade; prices, 0.25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Cokes, 1.25 lb, deduct 20¢ per base box. (6) 18 gage and heavier. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 40,000 lb and over. (9) Carload lot in manufacturing trade. (10) Hollowware enameling, gages 29 to 31 only. (11) Produced to dimensional tolerances in AISI Manual Sec. 6. (12) Slab prices subject to negotiation in most cases. (13) San Francisco only. (14) Los Angeles only. (15) San Francisco and Los Angeles only. (16) Seattle only. (17) Seattle and Los Angeles only.

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas														
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Frisco, LosAngeles	Fontana
NGOTS Carbon forging	$50.00														
Alloy	$51.00						(per net ton)								
ILLETS, BLOOMS, SLABS Carbon, rerolling[12]	$52.00				$52.00	$52.00	(per net ton)						$52.00		
Carbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)						$61.00		
Alloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon = $63.00) (per net ton)								
IPE SKELP	3.25						3.25				Warren =3.25				
VIRE RODS	3.40 to 4.15	3.40 to 3.90		3.40	3.40		3.65	3.50			Worcester 3.70		3.40	4.05[13] 4.10[14]	
HEETS Hot-rolled[6]	3.25 to 3.30	3.25	3.25	3.25–3.30	3.25	3.25	3.25	3.25		Warren, Ashland =3.25		3.45		3.95[15]	5.65
Cold-rolled[1]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.20	4.00	Warren 4.00	4.20		Pittsburg, Cal. 4.95	
Galvanized (10 gage)	4.40	4.40	4.40		4.40			4.40	Canton =4.40	4.40	Ashland =4.40			5.15[15]	
Enameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes[2] (10 gage)	4.80		4.80							4.80					
TRIP Hot-rolled[3]	3.25 to 3.30	3.25 to 3.30	3.25	3.25 to 3.30	3.25	3.25	3.25	3.25		3.25	Warren =3.25	3.45		4.00 to 4.25	5.90
Cold-rolled[4]	4.00	4.25		4.00	4.00	4.00	4.00	4.00		New Haven 4.50 Warren=4.00 to 4.25		4.20 to 4.50			7.10
INPLATE Cokes, 1.50 lb.[5] base box	$6.80	$6.80	$6.80		$6.90			$6.90	$7.00	Warren, Ohio =$6.80				Pittsburg, Cal.=$7.55	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.00, 80¢ and 60¢ respectively from 1.50 lb. coke base box price														
ERNES MFG., special coated	Deduct 90¢ from 1.50 lb. coke base box price														
LACKPLATE CANMAKING 55-70 lb, 75-95 lb, 100-128 lb	Deduct $1.60, $1.70 and $1.60 respectively from 1.50 lb. coke base box price														
LACKPLATE, h.e., 29 ga.[10]	4.75	4.75	4.75					4.85							
ARS Carbon Steel	3.35 to 3.55	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05 to 4.10	5.30
Reinforcing (billet)[7]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10	5.30
Cold-finished[8]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon=3.75				4.05	3.75	4.80[14]	5.50
Alloy cold-drawn	4.65 to 4.75	4.65	4.65	4.65		4.65	4.65	Massillon=4.65			Worcester 4.95				
LATE Carbon steel[11]	3.40 to 3.60	3.40	3.40	3.40 to 3.60	3.40 Cons	3.45 hohocken	3.40 =3.95	3.45 Coatesville=3.75, Claymont=3.95 Geneva=3.40, Harrisburg=6.50				3.65	3.45	4.30[16]	5.80
Floor plates	4.55	4.55		4.55				Cons hohocken =4.55							
Alloy	4.40	4.40							Coatesville=5.10						
IAPES, Structural	3.25 to 3.30	3.25	3.25		3.25	3.30	Bethlehem=3.30, Geneva, Utah=3.25						3.30	3.85 to 4.30	5.75
ANUFACTURERS' WIRE[9] Bright	4.15 to 4.50	4.15 to 4.65		4.15	4.15		4.15	4.25	Duluth=4.15, Worcester=4.45				4.15	5.15[13]	
Spring (high carbon)	5.20	5.20		5.20				5.30	Worcester=5.50 New Haven, Trenton=5.50				5.20	Duluth= 5.20-6.15	
ING, Steel sheet	4.05	4.05				4.05									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel						Straight Chromium		
	301	302	303	304	316	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	14.50	22.75	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	26.75	15.00	18.50	15.25
Forging discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	41.00	24.50	25.00	25.00
Billets, forging	24.25–26.50	24.25–26.50	26.25–28.75	25.50–27.75	39.00–42.75	32.75–35.75	19.50–21.50	20.00–21.75	20.00–21.75
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	44.00	26.00	26.50	26.50
Sheets	37.50–40.75	37.50–40.75	39.50–43.00	39.50–43.00	53.00–57.25	50.00–54.00	33.00	33.50	35.50 .....
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50–30.75	33.00–33.50	36.50–39.50	35.00–35.75	55.00–57.25	48.50–50.00	27.00	33.50	27.50 .....

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium	52¢
Oil harden manganese	29¢
Special carbon	26.5¢
Extra carbon	22¢
Regular carbon	19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

ELECTRICAL SHEETS

Base, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70 to 9.20
Dynamo	7.50 to 10.00
Transformer 72	8.05 to 11.80
Transformer 65	8.60 to 12.35
Transformer 58	9.30 to 13.05
Transformer 52	10.10

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 quality, per 100 lb	$3.20†
Joint bars, 100 lb	4.25
Light rails (from billets) per 100 lb	3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburg, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

† CF&I $3.35; Inland $3.50.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon	4.00¢
0.41 to 0.60 carbon	5.50¢
0.61 to 0.80 carbon	6.10¢
0.81 to 1.05 carbon	8.05¢
1.06 to 1.35 carbon	10.35¢

Worcester, add 0.30¢.

CLAD STEEL

Base prices, cents per pound

	Plate	Sheet
Stainless clad		
No. 304, 20 pct, f.o.b.		
Coatesville, Pa.	*26.50	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa.		*22.50
Nickel-clad		
10 pct f.o.b. Coatesville, Pa.	27.50	
Inconel-clad		
10 pct, f.o.b. Coatesville.	36.00	
Monel-clad		
10 pct, f.o.b. Coatesville.	29.00	
Alumnized steel sheets		
Hot dip, 20 gage, f.o.b. Butler, Pa.	.....	9.25

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* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base Column	*Pittsburg Calif.*
Standard & coated nails*	103	123
Galvanized nails*	103	123
Woven wire fence†	109	132
Fence posts, carloads††	114	..
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	...

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* Pgh., Chi., Duluth; Worcester, 6 columns higher. † 15½ gage and heavier ** On 80 rod spools, in carloads. †† Duluth only.

	Base per 100 lb	*Pittsburg Calif.*
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	....

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‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.

‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dyn-alloy	Hi Steel	Mayari R	Otis-coloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	5.20	5.20	5.20	5.30	5.20	5.30	5.20	5.20	5.65
Sheets									
Hot-rolled	4.95	4.95	4.95	5.25	4.95	4.95	4.95	4.95	5.25
Cold-rolled	6.05	6.05	6.05	...	6.05	6.05	6.05	6.05	6.35
Galvanized	....	6.75	....	....	....	6.75	...	...	...
Strip									
Hot-rolled	4.95	4.95	4.95	....	4.95	4.95	4.95	4.95	5.25
Cold-rolled	....	....	6.05	....	....	6.05	6.05	...	6.35
Shapes	....	4.95	....	....	4.95	5.05	4.95	....	....
Beams	....	4.95	....	....	....	....	....	....	....
Bars									
Hot-rolled	5.10	5.10	5.10	....	5.10	5.10	5.10	....	5.40
Bar shapes	....	5.10	....	....	5.10	5.10	5.10	....	....

PIPE AND TUBING

Base discounts, f.o.b. mills,
Base price, $200.00 per net ton.

andard, threaded and coupled

el, buttweld*	Black	Galv.
in.	43 to 41	22 to 20
in.	46 to 44	26 to 24
n.	48½ to 46½	29 to 27
-in.	49 to 47	29½ to 27½
-in.	49½ to 47½	30 to 28
n.	50 to 48	30½ to 28½
to 3-in.	50½ to 49½	31 to 29

el, lapweld		
n.	39½	19½
to 3 in.	39½	23½
to 6 in.	46½ to 42	26½ to 22½

el, seamless		
n.	38½ to 27	18½ to 7
to 3-in.	41½ to 35	21½ to 12½
to 6-in.	43½ to 38½	23½ to 18½

ought Iron, buttweld		
-in.	+20½	+50
-in.	+10½	+39
& 1¼-in.	+ 4½	+30
n.	— 1½	+26½
n.	— 2	+26

ought Iron, lapweld		
n.	+ 7½	+34
to 3½-in.	+ 5	+29½
n.	list	+23½
to 8-in.	+ 2	+25

ra Strong, plain ends

el, buttweld		
in.	42 to 40	22½ to 20½
in.	46 to 44	26½ to 24½
1.	48 to 46	29½ to 27½
-in.	48½ to 46½	30 to 28
-in.	49 to 47	31 to 28½
1.	49½ to 47½	31 to 29
to 3-in.	50 to 48	31½ to 29½

el, lapweld		
1.	39½	20½
to 3-in.	44½	25½
to 6-in.	48 to 44	29 to 25

el, seamless		
1.	37½ to 32½	18½ to 13½
to 3-in.	41½ to 36½	22½ to 17½
to 6-in.	45	26

ought Iron, buttweld		
in.	+16	+44
in.	+ 9½	+37
o 2-in.	— 1½	+26

ought Iron, lapweld		
1.	+ 4½	+30½
to 4-in.	— 5	+19
to 6-in.	— 1	+23½

'or threads only, buttweld, lapweld and mless pipe, one point higher discount wer price) applies. For plain ends, tweld, lapweld and seamless pipe 3-in. l smaller, three points higher discount wer price) applies, while for lapweld seamless 3½-in. and larger four nts higher discount (lower price) apes. On buttweld and lapweld steel pipe, bers are granted a discount of 5 pct. l.c.l. shipments, prices are determined adding 25 pct and 30 pct and the card freight rate to the base card.

F.o.b. Fontana prices average 17 nts lower discount (higher price) on ck, 14 points on galvanized.

BOILER TUBES

'eamless steel and electric welded com-rcial boiler tubes and locomotive tubes, imum wall. Prices per 100 ft at mill in load lots, cut length 4 to 24 ft inclusive.

D n.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
	13	19.18	22.56	18.60	21.89
½	12	25.79	30.33	25.02	29.41
	12	28.68	33.76	27.82	32.74
½	11	35.85	42.20	34.78	40.94
	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

	Per net ton
24-in., del'd Chicago	$106.70
24-in., del'd N. Y.	103.50 to 108.40
24-in., Birmingham	93.50
. and larger, f.o.b. cars, San 'rancisco, Los Angeles, for all ail shipment; rail and water ipment less	120.30

lass "A" and gas pipe, $5 extra; 4-in. is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. & shorter	34
All diam, longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quentities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	..
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

	(½ in. and larger) *Base per 100 lb*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

	(7/16 in. and smaller) *Pct off List*
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	*Pct Off List*
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Set screws, oval points	
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

Effective CaF, Content:	*Base price per net ton*
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per Gross Ton
Old range, Bessemer	$6.60
Old range,nonbessemer	6.45
Mesabi, bessemer	6.35
Mesabi, nonbessemer	6.20
High phosphorus	6.20

Increases or decreases in freight rates, dock handling charges and taxes after Apr. 1, 1948, are to be added to above prices.

METAL POWDER

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	19.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	30.00¢
Antimony	51.17¢
Brass, 10 ton lots	27.25 to 37.25¢
Copper, electrolytic	33.625¢
Copper, reduced	34.25¢
Cadmium	$2.55
Chromium, electrolytic, 99% min.	$3.50
Lead	27.80¢
Manganese	55.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	66.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.0¢
Tin	$1.155
Tungsten, 99%	$2.90
Zinc, 10 ton lots	17.75 to 22.25¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$16.00 to $18.00
Foundry, Byproduct	
Buffalo	$22.75 to $23.10
Chicago, del'd	23.90
Chicago, f.o.b.	20.85
Detroit, f.o.b.	19.40
New England, del'd	22.75
Seaboard, N. J., f.o.b.	21.50
Philadelphia, f.o.b.	20.55
Swedeland, Pa., f.o.b.	20.50
Painesville, Ohio, f.o.b.	20.90
Erie, del'd	19.95
Cleveland, del'd	22.45
Cincinnati, del'd	21.40
St. Louis, del'd	20.98
Birmingham, del'd	18.66

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick	*Carloads, Per* 1000
First quality, Pa., Md., Ky., Mo. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50

Silica Brick	
Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	14.75
Silica cement, net ton, bulk, Utah and Calif.	21.00

Chrome Brick	*Per Net Ton*
Standard chemically bonded, Balt., Chester	$69.00

Magnesite Brick	
Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00

Grain Magnesite	*Std. ⅜-in. grains*
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50

Dead Burned Dolomite	
F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest, add 10¢; Missouri Valley, add 20¢	$12.25

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, per 100 lb.
(Metropolitan area delivery, add 15¢ to base, except New York, add 20¢)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$5.15-5.71	$6.31-6.57	$7.27-7.47	$5.35-5.66	$6.51	$5.37-5.52	$5.09-5.24	$5.35-5.57	$6.16-6.31	$9.14	$9.29	$10.54	$10.69
New York	5.40-5.98	6.28-6.43	7.25-7.73	5.58-5.88	6.48-6.73	5.78	5.32-5.58	5.53-5.63	6.18-6.38	9.17-9.53	9.32-9.68	10.40-10.77	10.55-10.92
Boston	5.48-5.64	6.39	7.56-7.69	5.54-5.89	6.75-6.79	5.74	5.39-5.54	5.48-5.59	6.24-6.34	9.40-9.44	9.55-9.59	10.84-10.94	10.92-11.09
Baltimore	5.28	6.18	7.15-7.38	5.34	....	5.53	5.33-5.39	5.39	6.13	....	....	....	....
Chicago	4.85-5.10	5.75-5.95	6.95-7.05	4.85-5.30	6.15	5.10	4.90	4.90	5.70	9.35	9.60	10.80	11.05
Milwaukee	5.02-5.07	5.92	7.12-7.22	5.02-5.37	6.32	5.22-5.27	5.07	5.07	5.87	9.15-9.17	9.32	10.52-10.57	10.67-10.72
Norfolk	5.75	....	....	....	....	6.00	6.00	6.00	....	....	....	....	....
Cleveland	4.98-5.20	5.75[1]-6.04[1]	7.18-7.24	5.02-5.65	6.70	5.35-5.54	5.16-5.42	5.15-5.34	5.70-5.95	9.14-9.66	9.29-9.89	11.05	11.30 ....
Buffalo	4.85-5.10	5.75-5.85	7.55-7.70	5.55-5.56	6.35	5.45-5.46	5.10	5.15-5.20	5.90-6.05	9.05-9.35	9.40-9.50	10.75	20.90
Detroit	5.20-5.55	6.05-6.50	7.45	5.25-5.70	6.25-6.55	5.50-5.55	5.30-5.37	5.30-5.52	6.02-6.07	9.31-9.55	9.20-9.47	10.72-10.95	10.87-11.10
Cincinnati	5.14-5.36[8]	5.82-6.21[8]	6.97-7.45	5.25-5.62[8]	6.31	5.50-5.71[8]	5.30-5.47[8]	5.30-5.62[8]	6.06-6.17[8]	9.31-9.35	9.50-9.51	10.75-10.76	10.90-10.91
St. Louis	5.19	6.04-6.09	7.29-7.39	5.19-5.79	6.49	5.39-5.44	5.24	5.24	6.04	9.69	9.94	11.14	11.39
Pittsburgh	4.85-4.90	5.75[1]	6.95-7.05	5.00-5.35	5.95	5.05-5.25	4.90-5.15	4.90-5.10	5.65-5.80	9.35	9.60	10.40	10.55-10.80
St. Paul	5.41	6.31	7.30-7.61	5.41	....	5.66	5.46	5.46	6.26	9.91	10.10	11.36	11.61
Omaha	5.92	....	9.18	5.92	....	6.17	5.97	5.97	6.77	....	....	....	....
Birmingham	5.05[1]	6.36	6.45	5.05[11]	6.36	5.25[11]	5.00[11]	5.00[11]	6.66		....	....	....
Houston	6.40	....	8.80	6.75	....	6.35	6.20	6.40	7.60	9.80	9.65	10.75	10.95
Los Angeles	6.30-6.40	7.85[1]-7.90	7.95-8.55	6.60-6.66	9.35[5]	5.95-6.10	5.75-5.90	6.05	7.85[15]-7.95	10.35[15]	10.20[15]	11.75[15]	11.95[15]
San Francisco	5.95[8]	7.15[2]	8.05-8.55[2]	6.75[8]	8.25	6.30-7.68[5]	5.90-6.90	5.90	7.55	10.35[15]	10.20[15]	11.75[15]	11.95[15]
Portland	6.50[4]	8.00[2]	8.15[2]-8.45[2]	6.85[4]	....	6.30[4]	6.25[4]	6.25[4]	8.25[4]	....	10.45[15]	....	12.05[15]
Seattle	6.20[4]-6.30[4]	7.75[2]-7.85[2]	7.65 8.00	6.55[4]-6.65[4]	....	6.20-6.30	6.15-6.25	6.05[4]-6.15[4]	8.00[14]-8.10[14]	....	10.30[15]-10.40[15]	....	12.00[15] 12.05[15]
Salt Lake City	6.15-8.00	7.35	7.90-9.06	7.10-7.45	....	5.75-6.65	6.65-7.00	6.95-7.25	7.55-8.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 l and over; (7) 400 to 14,999 lb; (8) 400 lb an over; (9) 500 to 1999 lb; (10) 500 to 999 lb (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13 400 to 1999 lb; (14) 1500 lb and over; (15 1000 to 4999 lb; (16) 4000 lb and over; (17 up to 1999 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do no include 3 pct tax on freight.

PRODUCING POINT PRICES

Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	.....	.....	.....	.....
Birmingham	42.88	43.38	.....	.....	.....
Buffalo	47.00-48.00*	47.00-48.00*	47.50-48.50*	.....	.....
Chicago	46.00	46.00	46.50	47.00	.....
Cleveland	46.00	46.50	46.50	47.00	51.00
Duluth	46.00	46.00	46.50	47.00	.....
Erie	45.50	46.00	46.50	47.00	.....
Everett	.....	49.50	50.00	.....	.....
Granite City	47.90	48.40	48.90	.....	.....
Ironton, Utah	62.00	62.50	.....	.....	.....
Lone Star, Texas	.....	75.00†	.....	.....	.....
Neville Island	46.00	46.50	46.50	.....	.....
Provo	46.00	46.50	...	.....	.....
Sharpsville	46.00	46.50	46.50	47.00	.....
Steelton	48.00	48.50	49.00	49.50	54.00
Struthers, Ohio	46.00	.....	.....	.....	.....
Swedeland	50.00	50.50	51.00	51.50	.....
Toledo	45.50	46.00	46.50	47.00	.....
Troy, N. Y.	.....	.....	.....	.....	54.00
Youngstown	46.00	46.50	46.50	.....	.....

DELIVERED PRICES† (BASE GRADES)

Consuming Point	Producing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Boston	Everett	$0.50 Arb.	.....	49.50	50.00	.....	.....
Boston	Steelton	6.27	54.27	54.77	55.27	55.77	60.27
Brooklyn	Bethlehem	3.90	51.90	.....	.....	.....	.....
Cincinnati	Birmingham	6.09	48.97	49.47	.....	.....	.....
Jersey City	Bethlehem	2.39	50.39	..	.....	.....	.....
Los Angeles	Provo	6.93	52.93	53.43	.....	.....	.....
Mansfield	Cleveland-Toledo	3.03	49.03-48.53	49.53-49.03	49.53	50.03	54.03
Philadelphia	Bethlehem	2.21	50.21	.....	.....	.....	.....
Philadelphia	Swedeland	1.31	51.31	51.81	52.31	52.81	.....
Philadelphia	Steelton	2.81	50.81	51.31	51.81	52.31	56.81
San Francisco	Provo	6.93	52.93	53.43	.....	.....	.....
Seattle	Provo	6.93	52.93	53.43	.....	.....	.....
St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....

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* Republic Steel Corp. price: Basis: pig iron at Buffalo set by average price of No. 1 hvy. mlt. steel scrap at Buffalo as show in last week's issue of THE IRON AGE. Price is effective until next Sunday midnight.

† Low Phos, Southern Grade.

Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio —$59.50; f.o.b. Buffalo $60.75. Add $1.25 per ton for each additional 0.50 pct Si. up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.7 pct or more P. Bessemer ferrosilicon price are $1.00 per ton above silvery iron prices o comparable analysis.

Charcoal pig iron base price for low phos phorus $66.00 per gross ton, f.o.b. Lysles Tenn. Delivered Chicago, $78.78. High phos phorus charcoal pig iron is not being pro duced.

rromanganese

78-82% Mn, Maximum contract base
ice, gross ton, lump size.

.b. Birmingham	$162
.b. Niagara Falls, Alloy, W. Va., Welland, Ont.	$160
.b. Johnstown, Pa.	$162
.b. Sheridan, Pa.	$160
.b. Rockwood, Tenn.	$165
.b. Etna, Pa.	$163

$2.00 for each 1% above 82% Mn;
nalty, $2.00 for each 1% below 78%.
Briquets—Cents per pound of briquet,
ivered, 66% contained Mn.

rload, bulk	10.0
n lots	11.6
ss ton lots	12.5

iegeleisen

Contract prices gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
lmerton, Pa.	$61.00	$62.00
h. or Chicago	65.00	66.00

nganese Metal

Contract basis, 2 in. x down, cents per
und of metal, delivered.
6% min. Mn, 0.2% max. C, 1% max.
2% max. Fe.

rload, packed	35.5
n lots	37.0

ectrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed
st of Mississippi, cents per pound.

rloads	32
n lots	34
ss ton lots	36

w-Carbon Ferromanganese

Contract price, cents per pound Mn con-
ned, lump size, delivered.

	Carloads	Ton	Less
7% max. C. 0.06% P, 90% Mn.	25.25	27.10	28.30
0% max. C	24.75	26.60	27.80
5% max. C	24.25	26.10	27.30
0% max. C	23.75	25.60	26.80
0% max. C	23.25	25.10	26.30
5% max. C, .00% max. Ci	20.25	22.10	23.30

icomanganese

Contract basis, lump size, cents per
und of metal, delivered, 65-68% Mn,
20% Si, 1.5% max. C.

rload bulk	8.60
n lots	10.25
quet, contract basis, carlots, bulk elivered, per lb of briquet	10.0
n lots	11.6
ss ton lots	12.5

very Iron (electric furnace)

Si 14.01 to 14.50 pct., f.o.b. Keokuk,
a, openhearth $84.00, foundry, $85.00;
.75 f.o.b. Niagara Falls; Electric fur-
e silvery iron is not being produced at
kson. Add $1.00 per ton for each ad-
onal 0.50% Si up to and including
%. Add $1.00 for each 0.50 pct. Mn over
ct.

con Metal

ontract price, cents per pound con-
ned Si, lump size, delivered, for ton lots
ked.

Si, 2% Fe	20.70
Si, 1% Fe	21.10

con Briquets

ontract price, cents per pound of
uet, bulk, delivered, 40% Si, 1 lb Si
uets.

load, bulk	5.90
lots	7.50
s ton lots	8.40

ctric Ferrosilicon

ontract price, cents per pound con-
ned Si, lump size, bulk, in carloads,
vered.

Si	17.50
Si	10.50
Si	13.00
Si	14.65
5% Si	16.50

cium Metal

astern zone contract prices, cents per
nd of metal, delivered.

	Cast	Turnings	Distilled
lots	$2.05	$2.95	$3.75
s ton lots	2.40	3.30	4.55

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered.

0.06% C	28.75
0.10% C	28.25
0.15% C	28.00
0.20% C	27.75
0.50% C	27.50
1.00% C	27.25
2.00% C	27.00
65-69% Cr, 4-9% C	20.50
62-66% Cr, 4-6% C, 6-9% Si	21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload, bulk	13.75
Ton lots	15.25
Less ton lots	16.15

High-Nitrogen Ferrochrome

Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carload	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carload	27.75
Ton lots	30.05
Less ton lots	31.85

Chromium Metal

Contract prices, cents per lb. chromium contained packed, delivered, ton lots. 97% min. Cr. 1% max. Fe.

0.20% max. C.	1.09
0.50% max. C.	1.05
9.00% min. C.	1.04

Calcium—Silicon

Contract price per lb. of alloy, lump, delivered.

30-33% Ca, 60.65% Si, 3.00% max. Fe.

Carloads	17.90
Ton lots	21.00
Less ton lots	22.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	19.25
Ton lots	21.55
Less ton lots	22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.

Alloy 5: 50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	19.75
Less ton lots	21.00

V Foundry Alloys

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max, St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn. V-7: 28.32% Cr, 15-21% Si, 14-16% Mn.

Ton lots	15.75¢
Less ton lots	17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 56%, Ti 9%, Ca 5%.

Ton lots and carload packed	18.00¢
Less ton lots	19.50¢

SMZ

Contract price, cents per pound of allov, delivered. 60-65% Si, 5-7 Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.25
Less ton lots	18.50

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered	$2.25
Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.	
Openhearth	$2.90
Crucible	3.00
High speed steel (Primos)	3.10
Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound Contained V_2O_5	$1.20
Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.	
Ton lots	$2.75
Less ton lots	2.90
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo.	95¢
Calcium molybdate, 45-50%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo.	80¢
Molybdenum oxide briquets, f.o.b. Langeloth and Washington, Pa., per pound contained Mo.	80¢
Molybdenum oxide in bags, f.o.b. Langeloth and Washington, Pa., per pound contained Mo.	80¢
Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti	$1.23
Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti	$1.40
Less ton lots	1.45
High carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton	$160.00
Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton	$65.00
10 tons to less carload	75.00
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.	
Ton lots	21.00¢
Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.	
Carload, bulk	6.60¢
Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.	
Carload	8.40¢
Ton lots	9.30¢
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound	
Carload, bulk	11.00
Ton lots, packed	11.25
Less ton lots	11.75

Borron Agents

Contract prices per pound of alloy, delivered.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D.	
Ton lot	$1.20
Manganese—Boron 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. X D, delivered.	
Ton lots	$1.67
Less ton lots	1.79
Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.	
Less ton lots	$1.80
Silcaz, contract basis, delivered.	
Ton lots	45.00¢
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.	
No. 1	93¢
No. 6	63¢
No. 79	45¢
Bortam, f.o.b. Niagara Falls	
Ton lots, per pound	45¢
Less ton lots, per pound	50¢
Carbortam, f.o.b. Suspension Bridge, N. Y., freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.	
Ton lots, per pound	8.625¢
Borosil, f.o.b. Philo. Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B	$6.25

Quantity
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Information Available on German Oxygen

Washington

• • • **Detailed information** on the large scale production of oxygen in Germany is included in a report now available from the Office of Technical Services, Dept. of Commerce. The report was prepared by L. E. Carlsmith for the U. S. Field Information Agency, Technical.

Equipment of the Messer Company, chief German manufacturer of large-scale air separation plants of other than Linde-Frankl design, is discussed fully in the report. Other subjects include the physical constants of gases; the acetylene hazard; operation at low pressures only; the Heylandt process; and the Kepitza (Russian) process.

The description of the Kepitza process, of great interest to U. S. technicians during the past 2 years, was obtained through an interview with Dr. Linde, German authority on oxygen production. Dr. Linde questioned the theoretical efficiency of the process and said that little is known concerning the extent to which actual installations have been made.

In the discussion of the acetylene hazard in oxygen production, the report points out that acetylene is sometimes present at the air intake in concentrations sufficient to produce a definite explosion hazard during the oxygen production cycle. Information is given on methods for determining the presence of acetylene and other hydrocarbons in liquid oxygen; and the successful use of recent silica gel adsorbers in removing these impurities is discussed.

Throughout the report references are made to the commercial use of oxygen in quantity. There is evidence that, while the production of oxygen in purities up to 99 pct requires rapidly increasing amounts of energy, its manufacture in concentrations of less than 95 pct is not economic.

ASM Chapter Takes Inspection Trip

Rockford, Ill.

• • • **The local chapter** of the American Society for Metals recently took an afternoon tour of two Chicago steel plants.

The morning of the day's trip was devoted to observing operations in the Chicago Heights plant of the Columbia Tool Steel Co. The afternoon was spent in nearby Harvey, Ill. looking over the facilities of the Bliss & Laughlin plant.

xpansion Engine Type
edium Pressure
OXYGEN and NITROGEN
RODUCING PLANTS

IZES IN ETERS and UBIC FEET

Meters or
530 cubic feet

Meters or
1060 cubic feet

Meters or
1412 cubic feet

Meters or
1940 cubic feet

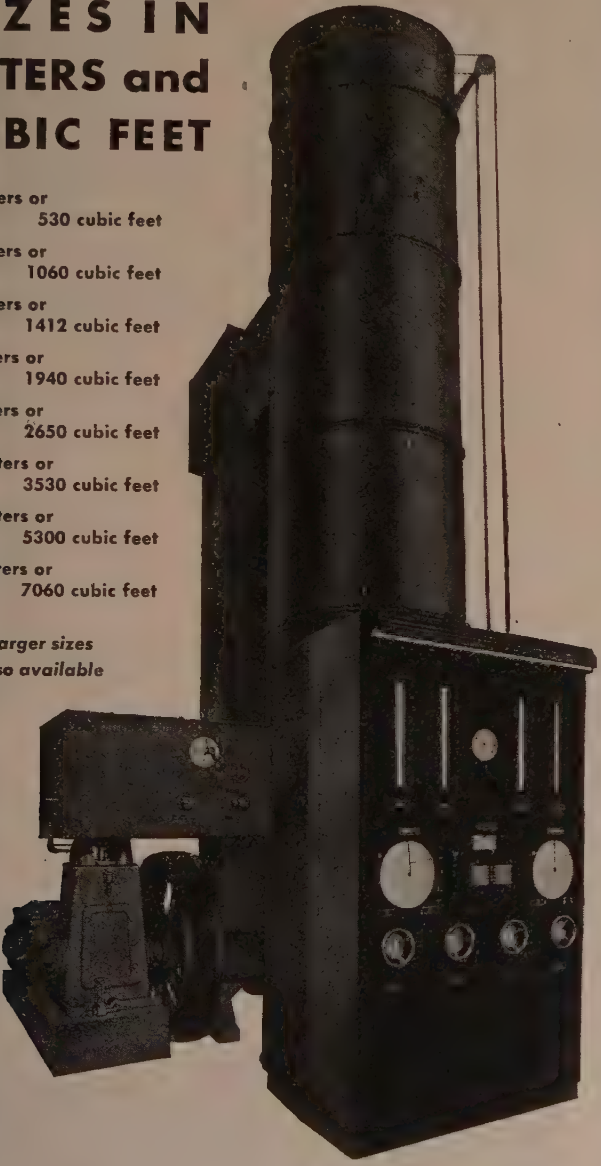
Meters or
2650 cubic feet

Meters or
3530 cubic feet

Meters or
5300 cubic feet

Meters or
7060 cubic feet

Larger sizes also available



t in standard size as listed above in single and ble rectification units. Streamlined panel pro-es quick visibility of all gauges. Compact design equires minimum of floor space.

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O'FALLON, ILLINOIS

WHY I'M PROUD OF MY JOB IN MAINE

"I work as a machine tender in one of Maine's larger pulp molding mills. We make various types of molded pulp products such as plates, trays, egg flats, cake circles and so forth. I have worked in this same place for more than twenty-two years.

"Working here is a good deal like working for yourself. You take the same interest in your work and the same pride when you have produced a fine product. It makes you want to find better and quicker ways of doing things. Many times I've found short-cuts for producing better articles in the mill.

"Outside of hours, I keep busy and happy, too. I own a small place where I raise several hundred chickens and also have time for a good big garden. I grow my own pickles—the best in Kennebec County—and sell them around the neighborhood.

"My hobbies and a chance to get outdoors give me more interest in my work. You can have your big city jobs, but I'll take Maine for working and for living, too!"

Harry O. Pollard

Harry Pollard is a typical Maine worker. Maine men and women are more than capable of doing a good job . . . they *like* to do it! There are other real advantages when you locate your plant in Maine. These include fair taxes; easy access to the nation's largest markets; good production weather all year 'round; power at nominal cost; pure processing water—and living in America's Vacationland.

It would pay to investigate the industrial possibilities of the State of Maine, if you are thinking of moving, expanding or decentralizing. Send for the free booklet, "Industrial Maine".

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Will Assist With Phantom Orders

Detroit

• • • **Herbert L. Tigges**, second vice-president c American Society of Tool Engineers, has accepte an assignment as advisor and consultant to th National Security Resources Board in connectio with work of the manufacturing division.

Tigges is a vice-president of Baker Bros., Inc Toledo. A senior member of the American Societ of Tool Engineers since 1936, he is also director c the sales and service committee of the Nation Machine Tool Builders' Assn.

His immediate work with the National Securit Resources Board will be in connection with th placement of "phantom" war orders in the machin tool field. This project is designed to aid the Amer can preparedness program and prepare industry fc the smooth handling of military requirements shoul an emergency arise.

American Brake Shoe Opens New Foundr

Meadville, Pa.

• • • **The National Bearing** Div. of the America Brake Shoe Co. recently opened a new nonferrou foundry here at Meadville. It is the newest of Brak Shoe's six postwar plants.

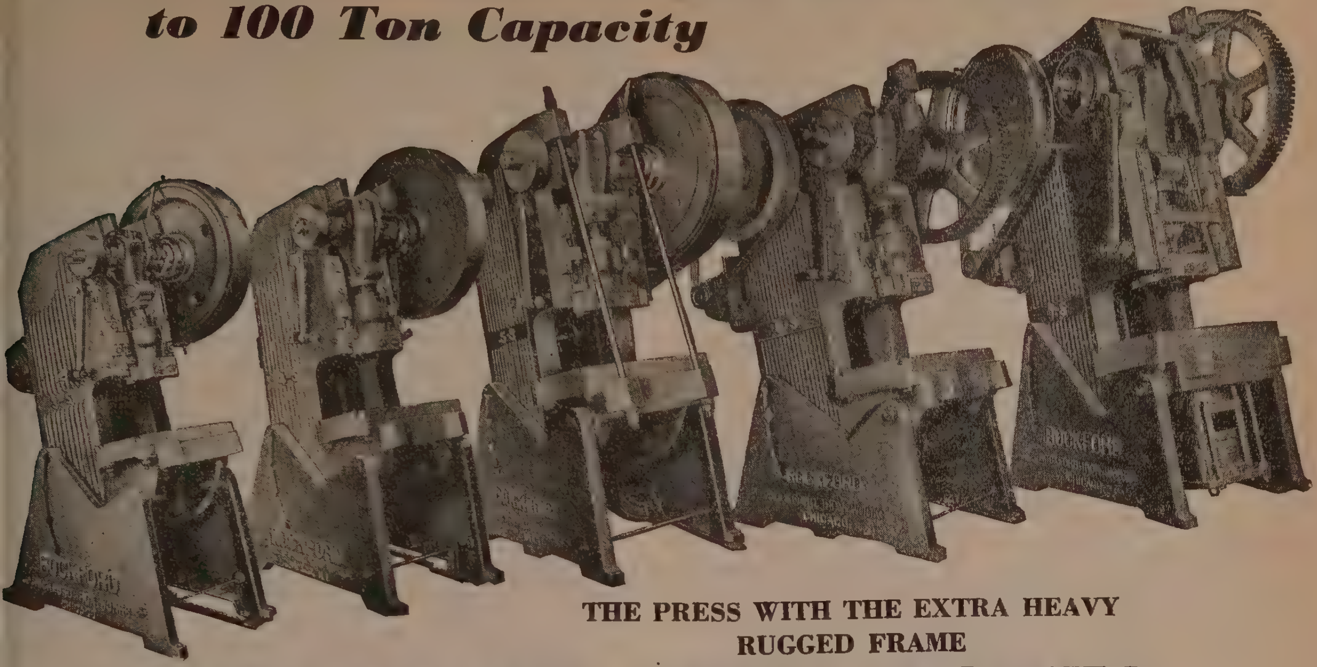
Having closed four old plants in the Nation Bearing Div., the company is concentrating produ tion for the eastern area in the new Meadvil foundry.

Located as it is in the heart of the country's ste producing area, Meadville was a logical choice fo the new plant since it placed National Bearin nearer to users of blast furnace castings, steel mi bearings and industrial nonferrous parts.

Operations have been discontinued at form plants in Jersey City, N. J.; the old plant in Mea ville, and two other plants in Pittsburgh.

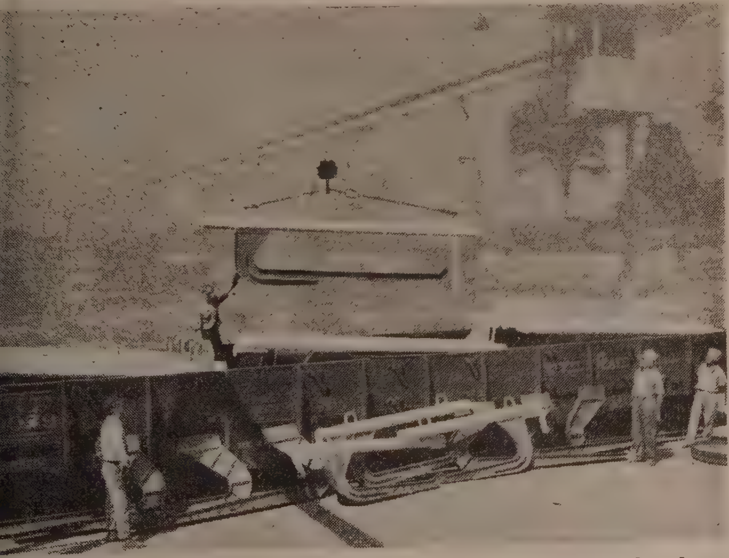
When in full production, the new foundry wi greatly exceed the combined productive capaciti of the four old plants. It will provide complete m chining facilities which were not available in an of the old plants.

One of the Oldest Manufacturers of Presses Now Specializing in Open Back Inclinables to 100 Ton Capacity



THE PRESS WITH THE EXTRA HEAVY
RUGGED FRAME

ROCKFORD IRON WORKS
875 West 120th St., Chicago 43, Ill.



LIGHTWEIGHT HOOKS *for* HEAVY-DUTY SERVICE

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● Here's another carload of Weldco hairpin hooks, ready for shipment to one of the country's largest steel plants. These pickling hooks are lightweight but **tough** . . . designed to handle loads as heavy as 3,000 to 5,000 pounds, easily and safely. Weldco hairpin hooks withstand hot pickling acids, too; in fact, they're more corrosion-resistant—more durable—than many heavier hooks.

Weldco pickling hooks are made of Monel, and can be furnished in various other alloys. Put these sturdy, lightweight hooks to work in your plant—then watch your pickling and material handling costs go down.

OTHER WELDCO PICKLING PRODUCTS
Include Pickling Crates, Baskets, Chains, Jets, Scrubbers, and Mechanical Picklers
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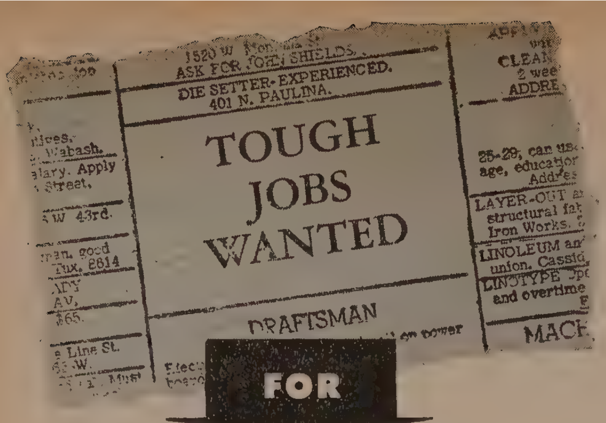
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Yes . . . for really tough jobs, as well as ordinary ones, there is no matching the Pittsburgh ARMORED GEAR Line for long life. Not only will ARMORED GEARS outlast untreated gears 5 to 1, but they also last 1 to 1½ times longer than oil treated gears . . . and equal or exceed the life of any other heat treated ones. That's what we guarantee!

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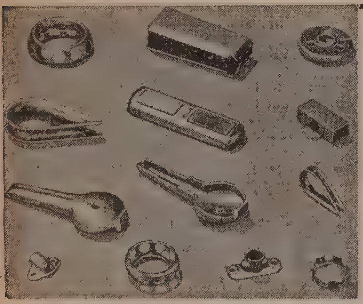

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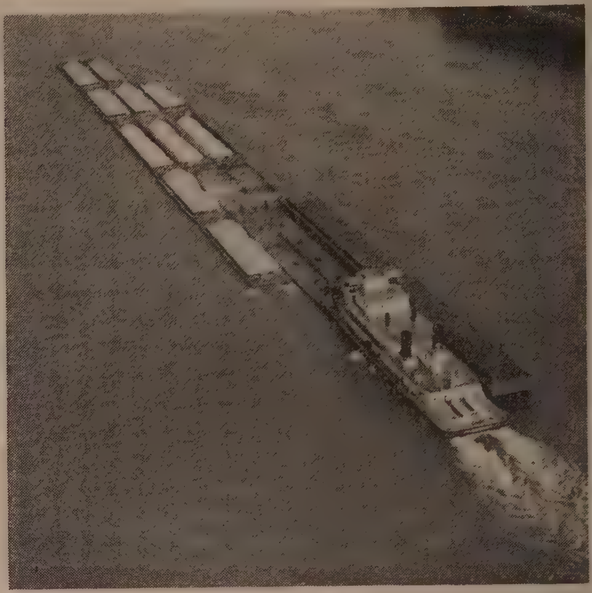
BOX 28, Write for Catalog 35 WYOMING, PA.

Diesel-Powered Towboats Move Barges

Pittsburgh

• • • **Diesel-powered** towboats are playing an increasingly important part in the country's river traffic. Currently about 65 pct of the total operating horsepower is diesel.

A recent survey showed that of the 889 boats normally in use on the Mississippi River and its tributaries, 680 are diesel powered.



Shown below is the Lehigh, a Union Barge Line Corp. boat, moving a 16-barge tow of iron ore and limestone down the Ohio toward the Mississippi.

Steel Forging Shipments Up 14 Pct

New York

• • • **Shipments of** commercial steel forgings during August totaled 111,000 short tons, 14 pct higher than the 97,000 tons shipped in July, according to the Bureau of the Census, Dept. of Commerce. The August shipments were 13 pct higher than the 98,000 tons shipped in August 1947, but were lower than the June 1948 shipments of 120,000 tons.

Total shipments for the first 8 months of 1948 of 917,000 tons were 4 pct higher than the 881,000 tons shipped in the same period of 1947. Unfilled orders for steel forgings on Aug. 31 amounted to 634,000 tons, a slight increase over the orders on the books at the end of July.

The August shipments of drop and upset forgings amounted to 79,000 tons, 12 pct above the 71,000 tons shipped in July. Unfilled orders for drop and upset forgings at the end of August totaled 521,000 tons, a backlog of between 6 and 7 months' activity at the present rate of shipments.

Shipments of press and open hammer forgings during August totaled 32,000 tons, 19 pct higher than the 27,000 tons shipped in July. At the end of August, unfilled orders for press and open hammer forgings amounted to 113,000 tons, about the same as in July, and represented nearly 4 months backlog at the current rate of production.

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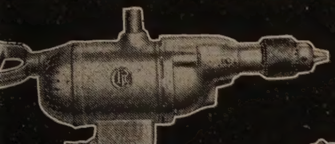
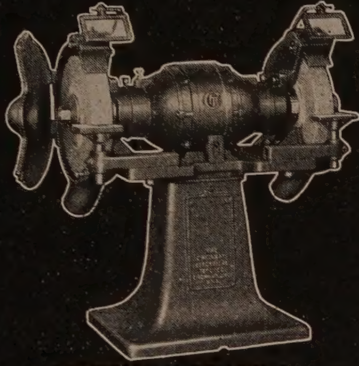
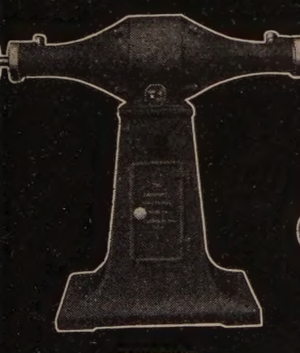


ELECTRIC DRILLS
¼" TO 1¼"

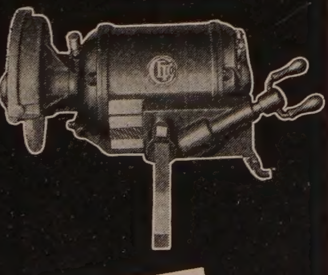


GRINDERS—⅓ TO 15 H. P.

PORTABLE GRINDERS—5", 6", AND 8" WHEEL CAPACITIES



BUFFERS
½ TO 15 H. P.



TOOL POST GRINDERS
¼ TO 1 H. P.

MANUFACTURERS OF

- Electric Drills
- Screw Drivers
- Nut Setters
- Tappers
- Routers
- Portable Grinders
- Tool Post Grinders
- Speed Lathes
- Bench and Pedestal Grinders
- Bench and Pedestal Buffers
- Abrasive Cut-off Machines
- Air Master Dust Collectors

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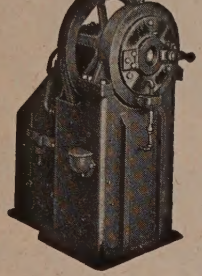

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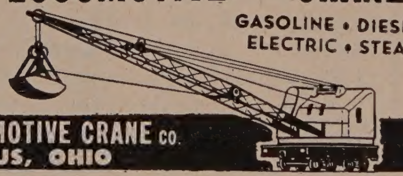

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Stove Industry Saves Steel and Money

Detroit

• • • **Thousands of tons** of steel and millions of d lars in cost to the consumer have been saved since t end of the war by improvements in the design a manufacturing techniques in the stove and heati industry, according to a Detroit industrial resea agency.

Results of a survey by this group shows that scrapping tradition these savings have come direc from adopting the most modern techniques availab The industry has also been able to accomplish t following: (1) Virtually double production capaci as compared with prewar, (2) greatly restrict co rises and resulting price increases, today's standa models—which compare favorably with the delu models prior to the war—being little higher in pri despite the sharp rise in materials and labor costs, a (3) materially reduce the amount of iron and st required per stove, while actually increasing structu strength and reliability.

Principal of the changes which have swept the i dustry since the war is the adoption of redesigning f welding. Nuts, bolts and rivets have been eliminat wherever possible. Heavy and costly castings ha been replaced by lighter and stronger stampings, t various parts being assembled by resistance weldi —a process which, according to the Resistance Weld Manufacturers Assn., solidly and permanently joi metal parts by merely pressing them together a passing an electric current through the joint.

Other advantages to the consumer resulting fr the new design and production techniques includ reduced shipping costs (due to lighter weight), le damage in shipment or installation (due to great strength), easier handling in installation or movin decreased service troubles of a structural nature, a absolute uniformity of products.

Mild Economic Changes Expected in '4

New York

• • • **A consensus** of opinion among 112 leadi economists polled by F. W. Dodge Corp. indicates mo erate adjustments and only mild changes in curre economic trends during the coming year. The grou polled includes economists in business corporation financial institutions, universities and economic r search organizations.

Reporting results of the corporation's survey wholesale prices, industrial production, employme and construction, Thomas S. Holden, president of t fact-finding organization, revealed that 64 economis anticipate a business recession in 1949. Fifty-one them characterized the expected setback as mild, t as moderately serious; only three men expected a r cession of serious proportions or extended duration.

A quite considerable minority, numbering 47, e pects no recession at all in 1949. More than 70 pct those who do expect a recession think it will start b fore the middle of 1949; some think it has alread started.

A number of those replying made reservations the effect that all estimates would become invalid case of war.

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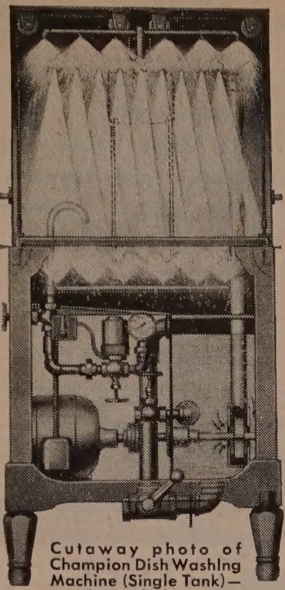

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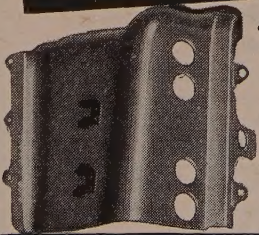

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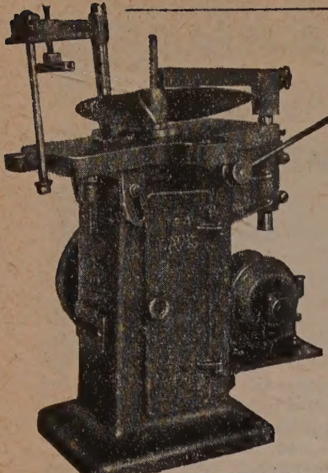

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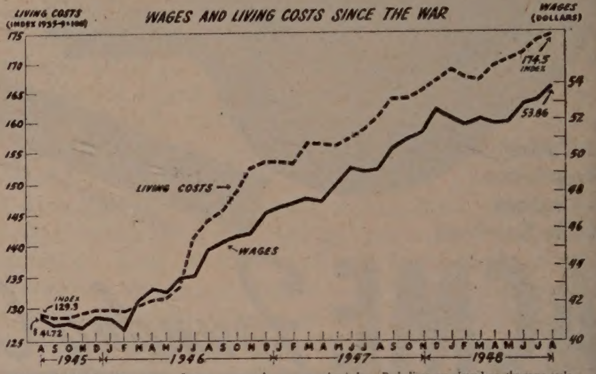
Workers Struggle to Keep Wages in Line

Washington

• • • Because the press and radio claim that the large postwar wage increases have been the *cause*, not the *result* of price rises, the American Federation of Labor has made a study based on government figures which shows that more than 3 years after the war the worker is still struggling to keep his wages abreast of price rises.

The first important fact shown by the chart below is that except for a few months in the spring of 1946, wages have steadily fallen behind in the race with prices during the whole postwar period. The wage and living cost lines on the same scale indicate how clearly wages lag.



Sources: U. S. Labor Department. Factory wages and consumer price index. Both lines are plotted on the same scale.

Two years after the war (August 1947), living costs were up 24 pct, wages only 18 pct. In August, 1948 (latest figures) living costs were up 35 pct and wages only 29 pct. These figures show what the worker has been up against in the postwar period.

Union members have managed to preserve their living standards only by asking large wage increases, and because their increases have been more than the average, shown in the chart, most of them have just about broken even and kept their wages up to the price rises.

Steel Men Attend AISI Technical Meet

Philadelphia

• • • The fourth of a series of regional technical meetings was held at the Warwick here Oct. 14, by American Iron & Steel Institute. It was attended by some 200 members of the institute, employees of company members, and especially invited faculty members of engineering colleges.

The meeting made available to men of the steel industry and to those who teach metallurgical students a wide variety of timely technical problems which the technical committees of the Institute are engaged in studying.

Seven addresses on current problems of interest to the technical men were presented at the 1-day meeting. S. J. Cort, vice-president, Bethlehem Steel Co., presided at the morning session. C. E. Davis, vice-president, Alan Wood Steel Co., presided at the afternoon session.

Similar technical meetings will be held by the Institute in other cities this autumn. The previous meetings were held in Pittsburgh, Cleveland and Chicago.